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VOL. XV. JUNE, 1904. NO. 6.

A RENAISSANCE HOUSE OF PARIS AND ITS HISTORY.

TO a historian of the picturesque school, as well as to a man of imagination, old houses possess a romance which archaeologists are sometimes apt to overlook. The antiquary, over-zealous about mere inscriptions and the like, too often fails to penetrate beneath the surface of what he studies, losing in consequence that delightful aroma which clings to most ancient things, and unwittingly depriving his subject of one of its greatest charms. Old houses, as M. G. Lenôtre, in "Vielles Maisons, Vieux Papiers," has shown better than any other modern writer, can be made as fascinating as great human personalities, as entrancing as works of fiction—if studied in connection with the times through which they have passed. Instead of mere conglomerations of stone and mortar they then become living entities. Ancient buildings, indeed, ought always to be considered side by side with the events of history; for these, sometimes, have an important bearing on their destinies, and leave the most eloquent traces on their interiors and exteriors. In a slighter degree, of course, than is the case with the works of great writers, but in a manner no less certain, is it possible to read, in the changes which old houses undergo from century to century, a partial story of ancient and modern times.

France has witnessed so many political changes, so many tragic upheavals in the course of her history that in no other city in the world are romantic houses so numerous as in Paris. Unfortunately, the majority are devoid of any special architectural interest, time having laid a rough hand upon them; and, though their records may have become exceedingly rich, it has been at the expense of beauty of form. Of the few now remaining in which architectural beauty and wealth of historical association are fairly equally balanced is a four-century-old house, standing at the corner of the Rue Bayard and the Cours-la-Reine, whose record is unique. Few, however, of the thousands of people, Parisians and visitors alike,

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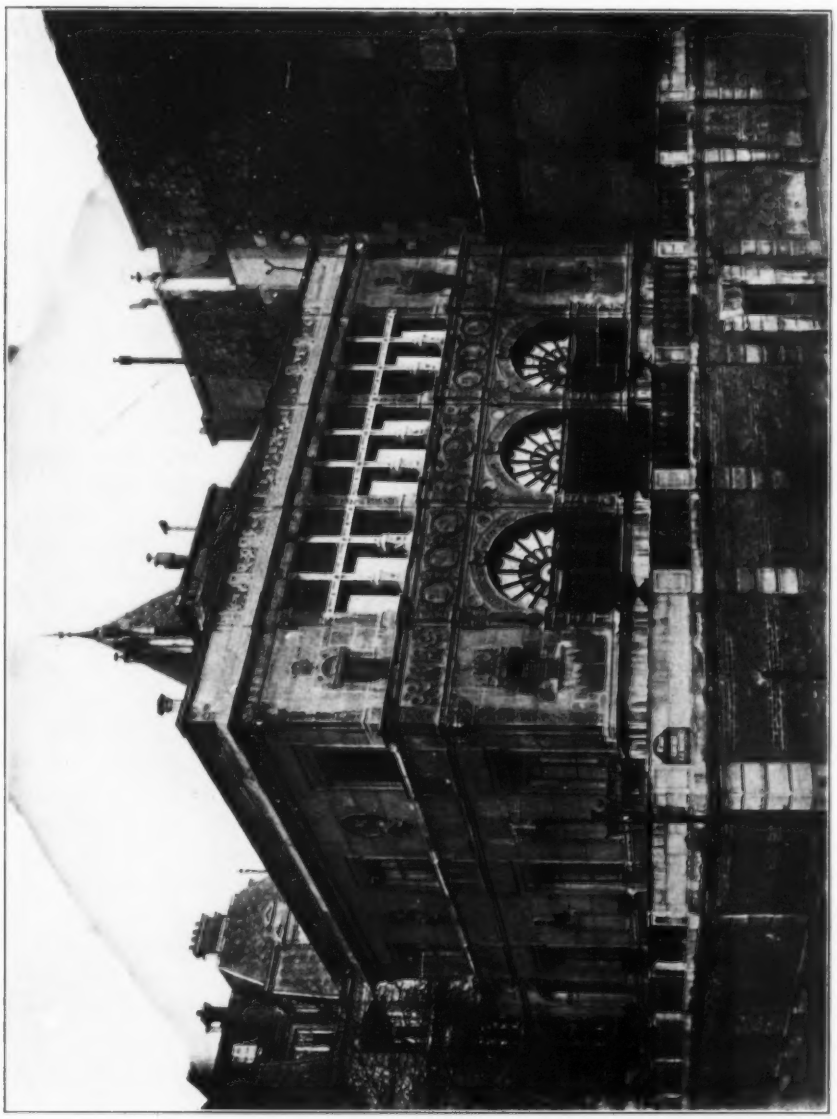


MAISON FRANÇOIS PREMIER.

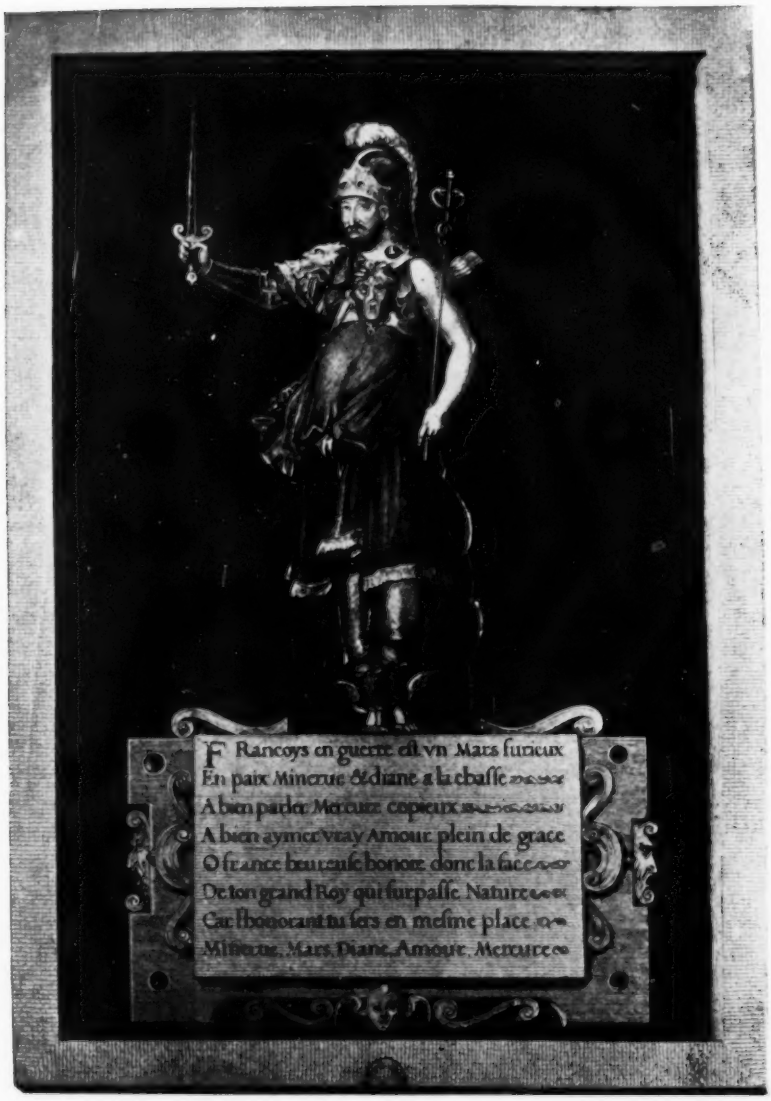
Cours-la-Reine, Paris.

who, passing it daily on the cars and in cabs, admire its admirable proportions, could tell you much about it beyond the fact that it is called the "Maison de François Ier." They are as equally ignorant of the noteworthy fact—at any rate for France, where houses are not commonly removed from place to place—that it once stood at Moret, forty miles from the capital, as of those details of its striking subsequent history which research has enabled me, in part, to reconstitute. They know vaguely that it is a fine specimen of Renaissance work, and they may, possibly, venture to inform you that the medallions which ornament its façade are by Jean Goujon, as has been done by certain learned German archaeologists—inaccurately. But that is all you will learn from them. Yet each group of beautifully sculptured children, each exquisite capital, each delicate pilaster, each inscription, almost every stone of this architectural jewel might tell them something.

Moret is a small country town of exceedingly ancient origin, situated on the river Loing, not far from where it joins the Seine, and about four miles from Fontainebleau. Enclosed on all sides by the magnificent forest, a better center could not be found by those engaged in sport, and it was this qualification which gave Francis I.—ardent sportsman that he was—the idea of building there a small house where he and his retinue could assemble before or after the chase. Accordingly, he had built an elegant little "pied-á-terre"—just as a wealthy sportsman of to-day will build for himself a shooting-box. That it was not intended to be used as a place of residence, but as a temporary house where rest and refreshment could be obtained, is evident from the manner in which the rooms were arranged. A portico with three arcades formed a sort of open vestibule which occupied almost the whole of the ground floor, and opened into a little courtyard, which, in all probability, was separated from the street by a low wall. A stybolate, breast-high, was the only thing preventing communication with the court. At right angles to the façade and on the left-hand side looking towards it was a beautiful doorway, surmounted by a magnificent salamander framed in an elaborately sculptured design and bearing an inscription, "Jevne Govvernement avit le vent"—"A youthful government is influenced by the wind." On the first floor was a large room—a sort of banqueting hall—whose principal ornament was a choice mantelpiece. It was lighted by three small bays charmingly ornamented with bas-reliefs and in perfect keeping with the decoration of the remainder of the building. Finally, on the upper cornice of the façade was a second inscription—"Qvi acit frenare lingum sentvmque donare fortier est illo qvi frangit viribus vrbes"—"He who can curb his tongue and overcome his passions is stronger than he who takes cities by storm."

There cannot be the slightest doubt that this house was built for the personal use of Francis I. The salamander is an unmistakable sign-manual; the two inscriptions—one showing that he had not long been on the throne when his architects received orders to build, the other that he commenced to reign with the good intentions of a young man just starting in life—are additional proof. It is no mere supposition to say that he occupied it, on occasions, from time to time; no mere effort of the imagination to picture him there with his courtiers in the intervals of hunting and shooting. We have plenty of trustworthy records bearing on the life of this royal lover of art and letters, and we can, without difficulty, place him in the framework of this Moret house. His great passion—from his early youth to the last days of his life—was sport, which was so irresistibly attractive, indeed, that he frequently postponed important business of State, until after he had satisfied his craving for the excitement of the chase. He kept his Court continually moving from place to place—from Fontainebleau to Rambouillet, Amboise, St. Germain, Blois, Compiègne, Villers-Cotterets, Châtellerault, or Moutiers, as the case might be. The branches of sport which he followed were falconry and what was called "la vénerie de toiles," which was equivalent to a modern battue. But, unlike Louis XII., who was equally as keen a sportsman, he much preferred the latter to the former. "La vénerie des toiles" was under the captaincy of M. d'Annchaud, afterwards a Marshal of France, whose hundred archers were charged with the placing of sheets of canvas sufficiently large and broad to enclose that part of the forest which had been selected for the battue. When this had been done, beaters drove the game towards the sheets, and, a sufficient quantity having been encircled, Francis and his friends did slaughter with bow and arrow or arquebuse. The king's sporting outfit made no light load; fifty wagons were required to carry the canvas sheets and the planks and carpets for the tents. In addition to this "matériel," his hunting staff consisted of more than a dozen mounted huntsmen, fifty bloodhounds and six valets to look after them, and fifty ordinary sporting dogs in charge of six other men. The annual expenditure involved in these battues was about $100,000, but double this amount was spent on falconry. No fewer than three hundred hawks were kept by Francis I., who was so indefatigable that he hunted both summer and winter.

The little house at Moret must, therefore, have often been the scene of brilliant gatherings. In the summer Francis and his principal courtiers would meet in the vestibule on the ground floor, while the excited hounds gathered in the courtyard, moving hither and thither with tails waving on high and their tongues lolling, or eagerly crowding beneath the stylobate in hope of dainty morsels

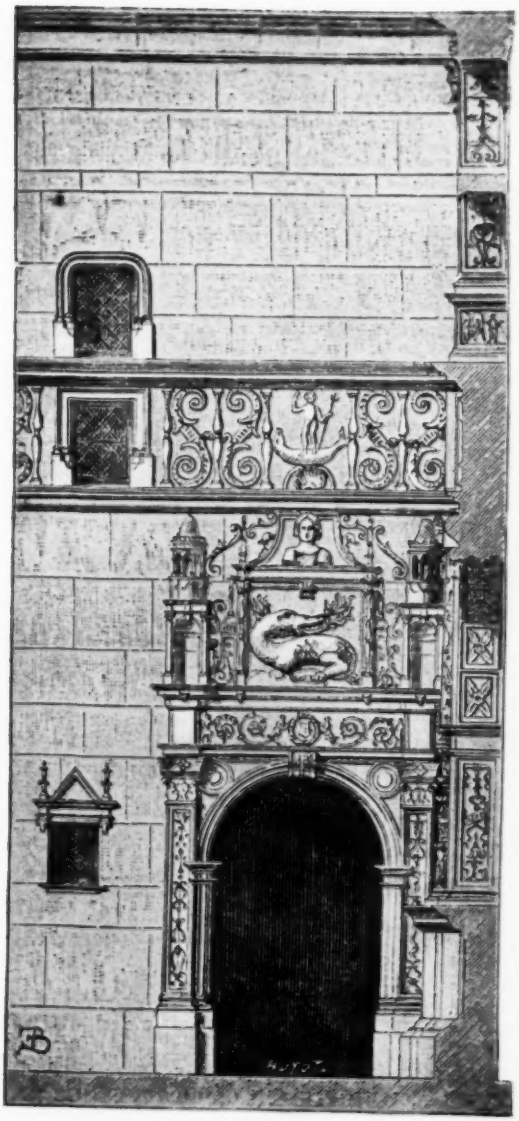

FRancoys en guerre eſt vn Mars furieux
En paix Minerue & diane a la chaſſe
A bien parler Mercure copieux
A bien aymer vray Amour plein de grace
O france heureuſe honore donc la face
De ton grand Roy qui ſurpaſſe Nature
Car honorant tu ſers en meſme place
Minerue, Mars, Diane, Amour, Mercure

FRANÇOIS PREMIER.

From an engraving of the original painting by Nicolo dell 'Abbate in the Cabinet des Estampes, Bibliothèque Nationale. This picture, painted from life, was given to the Cabinet des Estampes of the King by Comte de Caylus on June 15, 1765. Verses by Ronsard.

from the table of their royal master; in Winter he would partake of refreshment in the upper room, where the large open fireplace made it possible to have a roaring, crackling fire of logs. These repasts after the hunt was over must have been particularly delectable, if what Brantôme tells us is accurate; for he states that the king's table was "un vraie école," since all manner of subjects were discoursed upon. Great captains were always in attendance at his board, delighting the king with their narratives of renowned fights, and he loved to have learned men, writers and artists by his side when he ate. I doubt not that, on more than one occasion during his reign, the learned Pierre Duchâtel, called Castellanus, Bishop of Tulle, sat with him in the house at Moret and gave his opinion, as he was frequently called upon to do, on knotty points which arose during the conversation. And one can readily imagine the great protector of the arts turning his smiling, intelligent eyes upon him on receiving some particularly ready and sound pronouncement, and saying, in much the same words as those once used to Benvenuto Cellini, at Fontainebleau, on receiving from him an exquisite cup and basin, "Castellanus, it is my real opinion that the ancient philosophers themselves could not have been given so wise an answer. I have read all their works, but never have they given me such high satisfaction as your words." Rarely did Francis I. let an opportunity slip of encouraging learning. As everyone knows, the part which he played in the Renaissance of art and letters was all important in the history of France. In regard to architecture, alone, he exercised a powerful influence; and it is certainly thanks to him, in a great measure, that we to-day possess such superb specimens of the work of Pierre Lescot, Jean Goujon, Philibert de l'Orme, Jean Bullant, Pierre Bontemps, and Germain Pilon. Which of these sculptor-architects it was who built and ornamented the Moret masterpiece is not on record. Its sculpture has frequently attributed to Jean Goujon; but, although the merits of some of the capitals, pilasters, and panels amply justify the supposition, we must be content to look upon them as the work of an unknown artist. The general opinion among authorities on the Renaissance is that the house in many years anterior to the time of the authors of the Fontaine des Innocents.

We will not follow the story of this Renaissance house subsequent to the reign of Francis I. What was its history under Henry II., under Francis II., under Charles IX., and their successors? Was it used for the purpose for which it had been built; or was it transformed into a dwelling house, a secluded and convenient place of rendezvous for royal lovers? On these points the records are silent. But it is almost certain that in the course of the next two hundred and thirty years—from the death of Francis I. to the



MAISON FRANÇOIS PREMIER.
(Sketch of the Doorway made at Moret in 1825.)

Revolution—the little house was neglected and gradually fell into ruins. Such was the state, at any rate, in which we find it about 1820. At the beginning of the last century attention being called to the beauty of its façade, a number of sketches were made by architects and artists. Some of these are still in existence, enabling us to judge with perfect accuracy of its original aspect. One, a pencil drawing by M. Deroy, is reproduced as a frontispiece to Blancheton's "Vues pittoresque des chateaux de France;" careful engravings, based on another, are given in the second volume of N. X. Willemin's "Monuments Français Inédits" (1839); and there is a third in Bosc's "Dictionnaire raisonné d'architecture et des sciences et arts" (1878), here reproduced, showing the doorway already referred to, part of the frieze, and a small window which was to the left of the porch. The most interesting sketch, however, was an oil painting, executed prior to 1826, showing the façade and the doorway at right-angles to it, and recording the curious fact that the former "maison de chasse" of Francis I. was used at that time as the workshop or warehouse of a barrel-maker! The artist—so I am told by a Parisian gentleman who saw the picture in the collection of M. Cain, the father of M. Georges Cain, the amiable curator of the Musée Carnavalet—depicted hoops and staves on all sides. Unfortunately, this valuable archæological record, which one could wish to see in the Cabinet des Estampes at the Bibliothèque Nationale, has disappeared; it was either lost or stolen, M. Cain tells me, in the removal to his own house of his late father's collection.

It was not for long, however, that the Moret house was put to such an unworthy use. A better fate was in store for it, and when the Government, in 1826, sold it to an art-lover of Paris, it entered upon a new existence. And not before it was time. At the latter end of the eighteenth and the beginning of the nineteenth century its rich decoration suffered terribly, and but for the timely intervention of this "amateur des arts" there is no doubt it would quickly have gone to utter wreck and ruin. This gentlemen had the principal portions of the building carefully transported, stone by stone, to Paris. There, on the Cours-la-Reine, these scrupulously numbered "débris" were applied to a fresh building. All pieces of sculpture which had become worn by time were recarved after the model of existing perfect specimens.

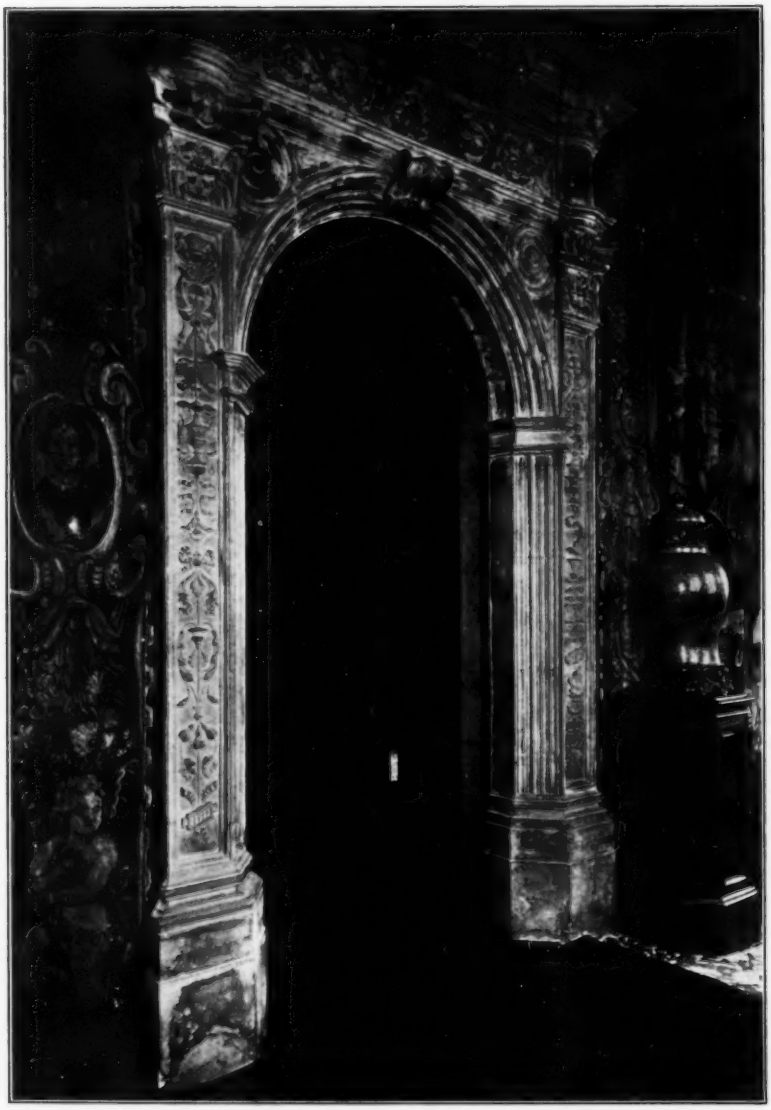
The restorers, as will be shown later on, were not always judicious in their work, and the arrangement and details of the Moret house were somewhat modified; but taking all things into consideration, they did not do so badly. It is easy, with the records at our disposal, to see where they deviated from the original plans, to distinguish the genuine examples of sixteenth century work from

MAISON FRANCOIS PREMIER.
(The Salamander in the Courtyard.)
Cours-la-Reine, Paris.

modern copies, and to detect portions of architecture which did not exist in the Moret building. There can be no doubt, for instance, that all the right-hand side of the façade, with the exception of the bas-relief, which was originally above the arcade to the extreme right, is an invention of the restorers, whose object, it should be borne in mind, was not to produce an exact copy of the house at Moret, but to build an agreeable and harmonious house-front out of the fragments at their disposal. They were so heedless of archæological exactitude that they placed the exceedingly beautiful doorway at the back of the house, and, moreover, separated it into two portions. The porch itself is now in the vestibule, the salamander and accompanying ornamentation are let into the wall of a private house, which now adjoins the "Maison de François I." in the courtyard. But let us return to our comparison of the present façade with the original one.

"As to the first floor," says M. Léon Palustre in "La Renaissance en France," which, with Willemin's book, is the most reliable authority on the subject, "it also formed a large room lighted not by a series of windows in three groups but by the bays open only on the right of the keystone of each of the lower arcades. The mullions, ornamented with circles and little figures, did not exist, at any rate as they are to-day; but at the sides they formed a framework for blind-windows, which, because of the contrast of their solid surface, gave more value to the empty middle spaces." The termination of the building above the cornice, on which is the Latin inscription already given, is also the work of the restorers, since the exact character of the roof of the original house is unknown. Similarly, the seven medallions (but not the ornamental designs of fruit and flowers which encircle them) are modern work, and not very artistic specimens, either. Nevertheless, these medallions (representing Louis XII., Anne of Brittany, Francis II., Marguerite of Navarre, Henry II., Diana of Poitiers, and Francis I.) were actually attributed by the German critics Lübke and Kolloff to the sixteenth century! Another slight addition, though not an architectural one, was an inscription on the cornice, viz.: "Inst. 1527 et rest. 1826." As Palustre says, the former date is inaccurate, the Moret house having undoubtedly been built much earlier in the sixteenth century; it was inspired, probably, by the latter date, as much as to say that it was almost exactly three hundred years since its erection.

In spite, however of these additions and alterations, the greater part of the façade of this Paris house is genuine work of the Renaissance. Note the perfect art with which the three large arcades are ornamented; the exquisitely delicate sculpture on the garlanded pilasters which separated them, and the sweet curves of



MAISON FRANÇOIS PREMIER.
(Doorway in the Vestibule.)

Cours-la-Reine, Paris.

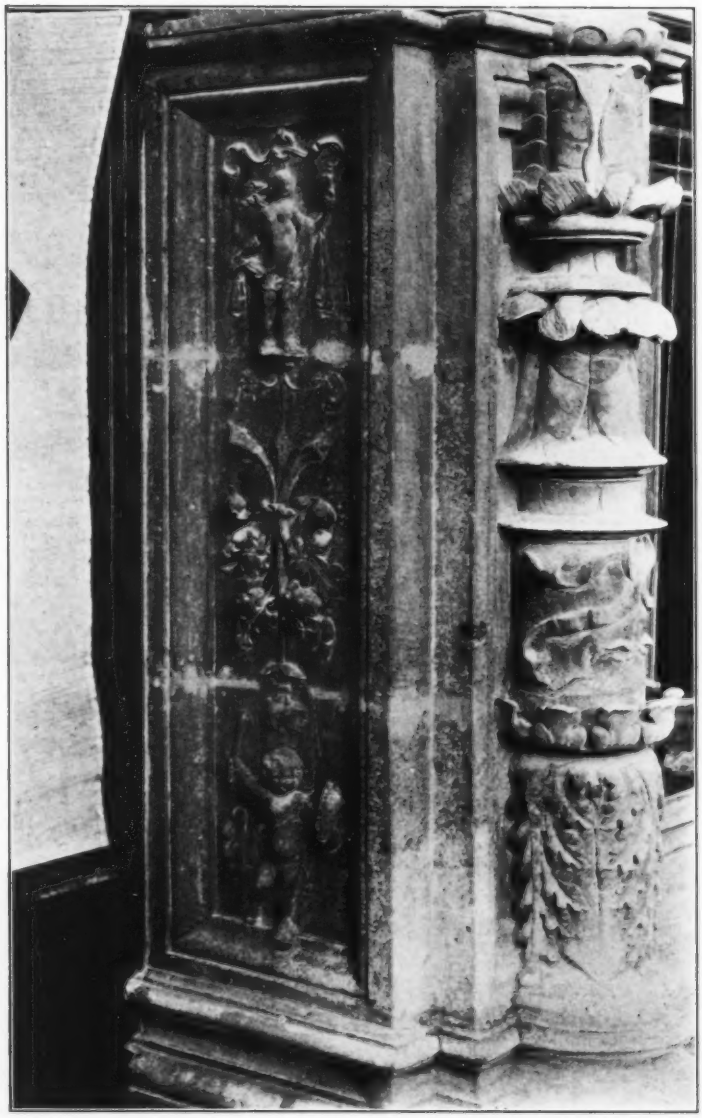
MAISON FRANÇOIS PREMIER.
(Bas-Relief to the Right of the Façade.)
Cours-la-Reine, Paris.

two of the capitals—those in which cupids figure. The last are particularly noteworthy, and especially the one with cornucopias and cupids swinging from lions' muzzles. Observe, also the archivolts, on whose outer face, on each side of a foliated console which protrudes at the keystone, are harmonious foliations, and other similar ornamentations. As to the intrados, the decoration consists of a series of sunken panels on which figure either plants and flowers alone or these alternating with scenes inspired by the Labors of Hercules. "No less remarkable," says Palustre, "is the execution of other cupids standing, two by two, between the rich crowns of foliage, which, in the compartment above the first arcade to the left, are certainly authentic. They share this quality with the ravishing bas-reliefs at each end of the frieze representing nude children occupied in various amusements. Probably, in the case of the one to the left, they represent some bacchanal festival; but it is impossible, in the one to the right, to interpret it, with Lübke, as a vintage-time scene. All the elements of such a composition are lacking and the trees in low-relief have only a distant resemblance to green pampres." To finish with the subject of architecture, the beauty of which will be fully apparent from the photographs in detail, I may point out that the "magnificent man-

MAISON FRANÇOIS PREMIER.
(Bas-Relief to the Left of the Façade.)
Cours-la-Reine, Paris.

telpiece," mentioned by historians as being in the room on the first floor at Moret, does not exist in the house on the Cours-la-Reine. Yet it was undoubtedly intact in 1826 and, presumably, was removed to Paris with other remains, since I find a reference to it in a description of the present house in the "Magasin Pittoresque" for 1834. It would be interesting to know what has become of it.

After getting as far as the period of restoration in my investigations into the story of the "Maison de François Ier," it occurred to me that it would be well to make inquiries into the identity of the "amateur des arts" who removed it to Paris. Much to my astonishment, my search brought to light an unexpected store of romance. Information obtained from M. J. Darcel, the present owner, who purchased the house from M. Février, a notary, in 1881, led to the discovery that, about 1826, it was in the possession of the celebrated actress Mlle. Mars. But it was not she who acquired it from the Government in that year. The purchaser was a Colonel De Brac—a "beau garçon," whose heart had been captivated by her beauty; and the house, like his affection, was bestowed upon the still brilliant star of the Comédie-Française. Though fast approaching at that time her fiftieth year, and within fifteen years of her farewell performance, Anne Françoise Hippo-



MAISON FRANÇOIS PREMIER.

(A Panel in the Intrados of one of the Arcades.)
Cours-la-Reine, Paris.

MAISON FRANÇOIS PREMIER.

(A Panel in the Intrados of one of the Arcades.)
Cours-la-Reine, Paris.

MAISON FRANÇOIS PREMIER.
(One of the Capitals.)

Cours-la-Reine, Paris.

MAISON FRANÇOIS PREMIER.
(One of the Capitals.)
Cours-la-Reine, Paris.

lyte Boutet was as youthful on the stage and as beautiful as in the early days when she appeared before Napoleon. On the advent of the romantic drama (1830) she showed every bit as great talent as in the old repertory; and when, in 1841, she acted at the Théâtre Français as Célimène in "Le Misanthrope," and as the Marquise in "Fausses Confidences," she astonished everybody by her juvenility. Only two years before her retirement she had created the rôle of Mlle. de Belle-Isle, in Alexandre Dumas' play, in such a manner as to make people believe she would never grow old.

Mentioning her appearance before Napoleon reminds me that Mlle. Mars remained passionately attached to his memory until the end of her days. It is related by Léon Gozlan in his "Chateaux de France" that when, on one occasion, he was at Rambouillet there was pointed out to him a certain little kiosk on an island of a lake where the great Corsican used to meet her in secret. The circumstance is quite sufficient to explain her pronounced Napoleonic opinions, and the incidents which occurred at the Comédie-Française during the Restoration. It is said that Louis XVIII.'s body-guard decided to make a demonstration against her. Hearing of their intention, the great actress exclaimed: "What has the King's body-guard in common with Mars?"—a disdainful remark which did not mend matters. Appearing on the stage in a dress embroidered with bees and violets, the hostile party threw the entire theatre into an uproar. She was called upon to deny having spoken disrespectfully of the body-guard and to shout "Vive le Roi!" but she stoutly refused to do either. At last, out of all patience, she got over the difficulty by a flash of wit. "You request me," she said, "to cry 'Vive le Roi!' Well, I have said it." She appears, however, to have become reconciled after a time to the new "régime;" though, so strong was her attachment to Bonaparte and his cause, it is highly probable that her attitude was dictated merely by personal interests. Louis XVIII. settled upon her, as in the case of Talma, a pension of $6,000 a year, and to have persisted in a course of stubborn resistance to the reigning family would have been financially unwise. Mlle. Mars could never have too much money. She squandered several princely fortunes; had one of the finest mansions and the most beautiful diamonds in Paris; and, towards the end of her life, acquired a taste for speculation on the Bourse.

Now, this passion for gambling is closely connected with her ownership of the house on the Cours-la-Reine. She was the owner, not only of the "Maison de François Ier," but of a good deal of the land where the Rue Bayard, the Rue Jean Goujon, and the Rue François Ier are now situated. In disposing of this magnificent building site she determined that the little house which she had re-

MADEMOISELLE MARS.

MAISON FRANÇOIS PREMIER.

(Italian Mantelpiece in the room facing the Terrace.)
Cours-la-Reine, Paris.

ceived from Colonel De Brac should play a part. Her desire was to sell building plots at a higher price to the aristocracy, so she hit upon the happy plan of presenting the "Maison François Ier" to Henry, Duke of Bordeaux. To place a home built on the sacred remains of the "maison de chasse" of a great King of France in the possession of the heir to the throne was an idea which could not fail to charm the aristocracy and aid in the realization of her object. But, unhappily for Mlle. Mars' pocket, it was not she who founded the aristocratic quarter which the Cours-la-Reine, the Rue Bayard, and the Rue François Ier constitute to-day. The Revolution of

MAISON FRANÇOIS PREMIER.
(Room facing the Terrace.)
Cours-la-Reine, Paris.

July, 1830, dashed her hopes to the ground. Charles X. and his grandson fled to England; Louis-Phillipe, Duke of Orleans, succeeded to the throne; and a serious financial crisis, in which Mlle. Mars was a heavy loser, followed on these political changes. The prospects of the Bonapartist party were at this time at so low an ebb that the only man to protest openly against the candidature to the throne of the Duke of Orleans was a Captain Dumoulin, who, on July 21st, appeared at the Hotel de Ville in a uniform so forgotten that the crowd mistook him for one of Charles X.'s

body-guard. On attempting to distribute several thousand copies of an Imperialistic proclamation he was attacked and only escaped with his life by taking refuge in a room occupied by Lafayette. Meanwhile, the young King of Rome was languishing at the Court of Vienna, where, two years later, he was to die.

Little more remains to be said of a house, the complete history of which is here related for the first time. It is now occupied by a gentleman, M. Darcel, who is a keen connoisseur of art, and who appreciates to the full the splendid artistic qualities of his property—qualities which he never wearies of pointing out to visitors. I must not omit to mention, also, that he is the possessor of many art treasures, including fine old furniture, ancient carvings, and an exceedingly beautiful Italian mantelpiece—the last-named being in the room on the ground floor opening on the terrace. Inside as well as outside the "Maison de François Ier" is beautified by art.

Bernard St. Lawrence.

MAISON FRANÇOIS PREMIER.
(Window to the left of the Façade.)
Cours-la-Reine, Paris.

DECORATIVE WORK IN VARIOUS METALS.

I.

Primitive Decorations in Iron and Bronze.

A FRIEND who lived many years in Japan was walking across a deserted part of one of the great southern cities, once a busy quarter, but then burned over, when his foot struck something heavy and hard, yet none too resistant. Turning back he pushed the object clear of the ashes and unearthed a curio which he presented to me on his return.

It is an octopus in bronze with snout and eyes pushed up on one side to simulate a face, the arms gathered under in small compass, more like waves or big moustaches than legs, the body swelled up to counterfeit the shaven head of a coolie above the eyes. To finish off the solemn comicality of the piece, a porter's knot is twisted around the bald head. The amusing adaptation of a marine monster to the head of a coolie, the whimsical expression of the creature, the sly caricature of a body of honest laborers for hire, all combine to produce a work of art of no mean order, while anyone conversant with bronze must admire the technical skill of the casting. Men who can work so deftly and play as they work are sure of the admiration of later generations.

This bronze was once part of some simple flimsy Japanese house or the furniture thereof. The bottom has been filed off in order to adapt it to a paperweight, and it stands before me on the library table now, blinking from protruding eyes with the slyest, most solemn air. There is no mark of maker or place, no inscription to give a clue to the period or forge. The able artisan who modeled it in beeswax is gone without a sign; but we may be sure that he enjoyed his work and that in order to produce it there was a public keen of appreciation which encouraged such trifles by purchasing them for their delectation—though with little interest in the artist who fashioned them.

The use of bronze in temple and house goes back to remote times. In literature we get a hint of it from the description given by Homer in the Odyssey of the palace of Alkinous, king of the Phaeacians, the palace with a threshold of bronze. "Brazen were the walls that ran this way and that from the threshold to the inmost chamber and round them was a frieze of blue, and golden were the doors that closed in the goodly house. Silver were the door-posts that were set on the brazen threshold and silver

the lintel thereupon, and the hook of the door was gold." The Phaeacians, embellished by the fancy of the poets, were in Homer's time perhaps a tradition of the lordly palaces in Crete, whose foundations have been explored by Evans. There is no reason to doubt that bronze and silver were used to clothe walls and doors, since we know that at early periods the gates of cities on the Euphrates were so treated. The description in the Bible of Solomon's temple suggests the same, where it speaks of the wood being "overlaid with gold," the roof covered with tiles of gold, and the porch embellished with the symbolical "pillars of brass" with capitals of molten brass decorated with lily work, chain work and pomegranates. Here we may suppose the columns were of wood on which plates of brass or bronze were fitted and held in place by nails, while the capitals of "molten brass" were castings. There is no reason to believe that the Phoenicians who built the temple for Solomon, or the architects of Egypt and Mesopotamia whom the Phoenicians copied, possessed the mechanical devices for casting, transporting and setting up such large objects in one solid piece as the pillars in the porch of the temple.

The description of the capitals of "molten brass" will recall the argument that the prototype of the so-called Corinthian Greek capital as we know it must have been originally of metal, because the foliage on it is too elaborate and undercut to have been first carved in wood or stone. Its title of Corinthian rests on no historical basis worthy of the name, but the fact that Corinth was as celebrated for its metal work as for its pottery may be noted as a point in favor of the supposition that elaborate capitals for columns were once cast at Corinth and that after these bronze capitals were copied in stone in Asia Minor and Italy, and occasionally elsewhere in Greece itself, the term Corinthian adhered to them. At the same time we have no evidence of the existence of solid metal capitals—and very imperishable things they are, if once they get buried—in any of the countries about the Mediterranean. On the other hand the metal plates of ancient tombs within and without, the overlays of bronze on gates and temple walls and other easily portable bits of metal in architecture were, of course, the first objects to be taken from a ruined house or temple or tomb after it was given over to plunder. So that the absence of such things from ancient sites does not prove they were unknown.

Iron, on the other hand, had no such records from antiquity to boast of like bronze, though its use for tools and weapons goes far back. So far as architecture is concerned, iron is a metal altogether modern in its use, but it is making up for lost time. Within one century it has driven stone out of the field for the construction of bridges and within the last half century we have instances

of iron churches, iron domes for great public edifices, iron markets, railway stations, office buildings, iron for dwellings and for sheds and barns in agricultural countries. England led the way in the use of iron for bridges more than a century ago, and France, a country that values more than any other the precedents of classical times, erected at Paris a number of churches of iron, Saint Eugène and Saint Augustin, for example. Just now we are about to see the state of Alabama casting in iron a statue fifty feet high as the contribution of her iron industries to the world's fair at St. Louis.

The very word we use for the metal in question is a puzzle to those who delve into the origins of terms. Most of the Aryan peoples use words for iron that hark back to the same root, for Latin ferrum merely retains the "f" which has fallen before our word from German "eisen" and Norse and Irish "iarn." We can see that also in the Irish word "fiarlann," a curved blade, where the "f" still adheres. The best we can do is to suppose that it comes down from some general term for ore, such as Sanskrit shows in "ayas," Latin in "aes" and German in "erz." But then we can make little of such forms as "sidereos" in Greek and "rauta" in Finnish. The impression we get from this, however, is the great antiquity of the metal, contrary to the idea formerly prevalent that bronze is an older metal in the hand of primitive man than iron.

As to "bronze" we are not much better off, but the testimony of language seems to corroborate the idea that it is a metal younger in history than iron. Attempts have been made to ally it with "brown," owing to its color, the trail leading back through an Italian term, brunezza, swarthiness; also with "to burn," because it was used for soldering metals. Those who derive the names of metals from places whence they were imported, as currants were so called because they came from Corinth, propose the town of Brundisium in South Italy through which they imagine the metal was imported from the Levant. Copper (cuprum) was certainly named from the island of Cyprus; so the analogy is pushed that this alloy of copper and tin or zinc was named from the "Brundisian" metal, the term becoming "bronzo" for short. This etymology has not been received with enthusiasm. Be that as it may, we are more interested in the uses to which these two metals are put in modern times than in the fancies of the philologist.

Although it is evident that bronze weapons were easier to make and easier to repair and did not rust like iron, so that they were both cheaper and more convenient, it is more than probable that iron was known in what is called the Bronze Age. Arrow and spear heads of different forms were made at the same time,

ANCIENT CHARIOT, COVERED WITH BRONZE, METROPOLITAN MUSEUM.

DETAIL OF ANCIENT BRONZE CHARIOT, METROPOLITAN MUSEUM.

also iron swords. But where moisture can reach it, iron is soon destroyed by rust, so that the earth and waters yield many bronze objects, while the absence of things in the other metal does not necessarily mean they did not exist. On the contrary, we may believe that from the streams and rocks and wherever else iron could be mined without trouble this metal was taken, though in less quantities than bronze and put to use under greater difficulties. Hence the peculiar importance given to the iron forge and the blacksmith among primitive people.

The ancient religions of northern Europe have glorified the work of the forge by giving the hammer to Scandinavian Thor and Gaulish Taranis, gods who used the celestial hammer as Zeus used the thunderbolts. We recognize the impression made upon barbaric nations by the wonder-working combination of fire and wind, the shop of the blacksmith becoming a place of magic. Endless are the variations in folk lore on this fruitful theme. From Greece we have descriptions of the forging of armor by Hephaistos and from Finland imaginative details of the wondersmith Ilmarinen, who was very properly allied to the gods of air. From the literature of old Ireland we have a pen picture of an establishment for the forging of iron weapons in the story of the battle of Magh Mucruihme (Moy Muckroo), from the Book of Munster. King Art, the chief king of Ireland, whose period is set by the Irish annalists in the second century after Christ, takes a solitary ramble on the day before the decisive battle waged against an army of rebels and foreign mercenaries from Great Britain and Gaul.

He chanced to stray and wander from his path; but had not gone far when he saw the branchy, thick foliaged wood and heard what surprised him much, the "great thunder, the heavy tramp, great loud rattle and reverberating sounds and commotion on all sides, and he saw the boarded spear-factory with its clean-bordered smoke chimney upon it." It was extensive, broad-yarded and had seven noble wide doorways. This great edifice was not, however, a place of ease and rest—"owing to the active rubbing of the blades on the grinding stones, the expert working of the tongs, the noise of the working of the bellows, the sledges and the anvils, the roar of the fires on the hearths, the hissing screech of the edged weapons when being tempered, the shrill noise or clashing of the hard-tempered, tough-bending swords that were being rubbed with the files and the simultaneous exertions of the pupil-armorers (Felmacs), the apprentices (Foglomantai) and the brave men working with those tools, so that endless black, smoky, opaque clouds, enveloping and concealing everything, and showers of red, fiery sparks were emitted from the broad sides and great flanks of that forge (ceardha)."

ANCIENT BRONZE CHARIOT, SIDE VIEW.

ANCIENT BRONZE CHARIOT, FROM THE FRONT.

Speaking of Ireland, it is not a little curious to find that bronze was used in the interiors of the houses of chieftains—who lived in constant close contact with their retainers—and especially on the couches of the great assembly hall. The early buildings in Ireland were of wattle and thatch, often circular in shape, having a fireplace in the middle with a hole in the conical roof for the escape of smoke. Wood was more rarely used as a material for building, while only later, perhaps as late as the conquest of England by William, were stone buildings erected to any great extent, even for churches. Exception, of course, must be taken for the small oratories and the round towers; also for the beehive cabins in those parts of Ireland where a great scarcity of trees forced the inhabitants to construct stone huts. The fronts of the couches between the fireplace and outer wall were often covered with bronze.

The old stories speak of canopies of bronze or silver over the king's couch. Bronze or silver pillars supported the canopy. While the bards gave rein to their imagination when describing such things, the foundation of their sketch is always an actual object. Thus, from the description of the circular palace of King Ailill and Queen Meave (the original of Queen Mab in English poetry), we learn that bronze was used as an embellishment of the interior fittings, just as among the Assyrians and the Phaeacians of Homer. This circular house was in four compartments, each compartment having seven divisions for couches reaching from the wall to the central fireplace.

"A front of bronze upon every couch; facings of red yew with moulded ornamentations upon them all. Three columns of bronze in the front of every couch. Seven strips of bronze from the concave roof of the couch (the canopy) to the roof of the house. The house was made of fir and covered with shingles on the outside. There were sixteen windows to the house with doors of bronze upon each of them. A yoke of bronze across the door into the courtyard. Four pillars of bronze on the couch of Aillil and Meave and ornamentations of bronze upon them all; and the couch was in the real centre of the house. Two railings of silver embellished with gold about it. A silver wand in front capable of reaching with its sound the centre of the courtyard of the house."

We may suppose that this was only one building among many close together within the wall of the royal abode in Cruachan, for others are mentioned. It was the assembly house for the royal couple, their courtiers and guests, the couches representing chairs of state, but capable of being used for sleeping as well as feasting. When Ailill wished silence or desired to stop a discussion that

boded a quarrel he seized the silver wand before his couch and striking the bronze canopy supported by the four bronze columns gave notice by the clang that conversation should cease.

That there ever existed literally such a palace it is not necessary to suppose; but the liberal use of copper, bronze and brass among the early people of Europe, the remains of ancient chariots, shields, war-horns and helmets of bronze in the museums, which have been found in Italy, France, Germany, Scandinavia and Ireland in the bogs and in graves, give us to understand that such a description as this was based on facts and that during certain periods the smiths and bronze-founders of Ireland were nowise behind the artificers of the rest of Europe, more especially during those centuries when the continent was ravaged by the wars that destroyed the power of the Roman Empire.

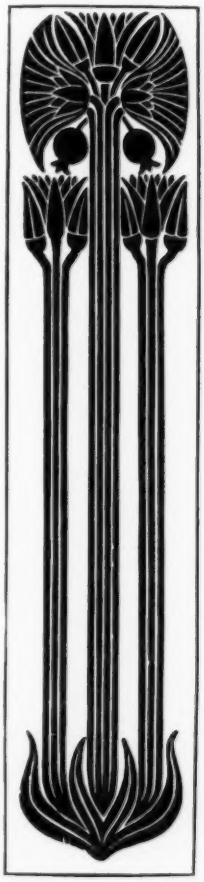
The covering of gates, doors, windows and fronts of couches with sheet bronze which we find in Assyria, ancient Italy and old Ireland, could not have had its origin in a feeling for decoration, but must have had a practical purpose at first. Evidently it was to give a stay to the attacks of fire. The enemy could not burn gates and doors if sheathed with metal. The front of couches was protected from the sparks from the wood fires burning in the centre of the primitive house. Later came the impulse to make the safeguards beautiful. In their storehouses, built of thick plaster walls and wood, the Japanese use bronze to offer resistance to the fires that devastate their towns. Bronze plates are also employed to bind together the wood of boxes and large carvings. These are useful, but the artistic sense of the Japanese has made them things of beauty by hammering and chiseling the metal and stamping them out in forms that suggest the leaves of plants and trees; gilding and lacquer are often further means of embellishment. Especially do the Japanese beautify and accentuate the joints of wooden construction by such tastefully shaped and chiseled, hammered and colored applications of metal.

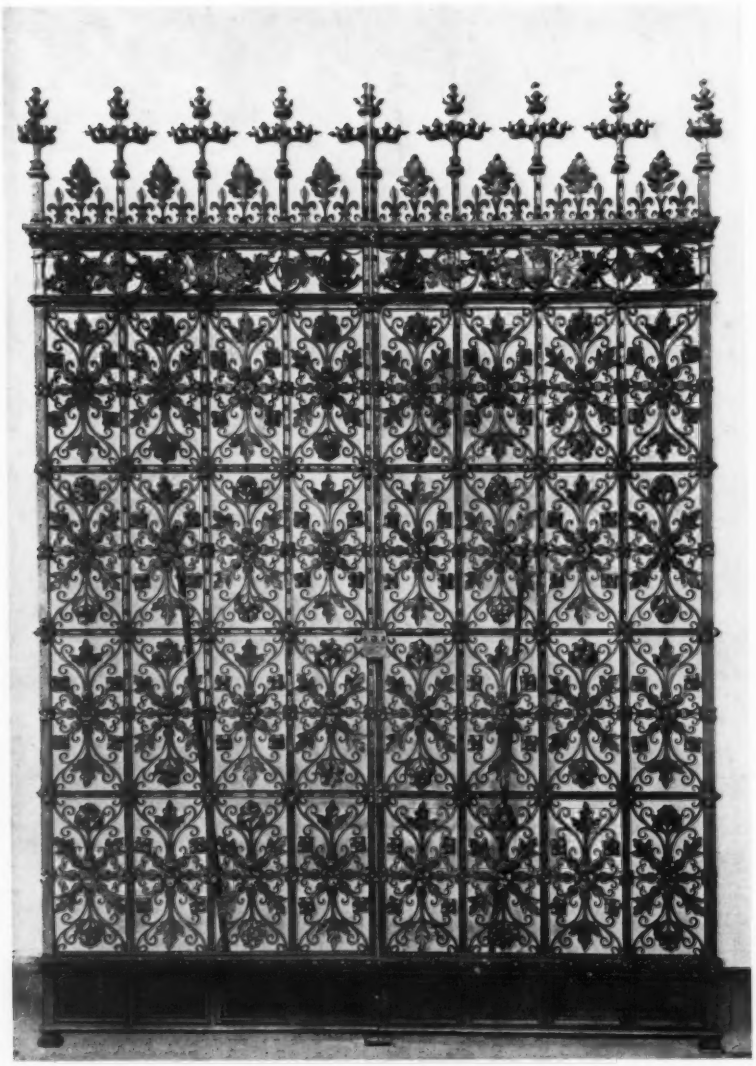
This slight sketch of the employment of metals in a decorative way among the old peoples might be extended to embrace those of Syria, Persia and India, and instances might be given from tribes in Central Africa. But I am not reviewing the records of the past. All that is necessary is to recall the fact that there are many ways for the use of metals within and without our public and private buildings which are never tried in modern times. On the other hand, we employ metals in a thousand ways the ancients and the Orientals never dreamed of.

Charles de Kay.

(TO BE CONTINUED.)

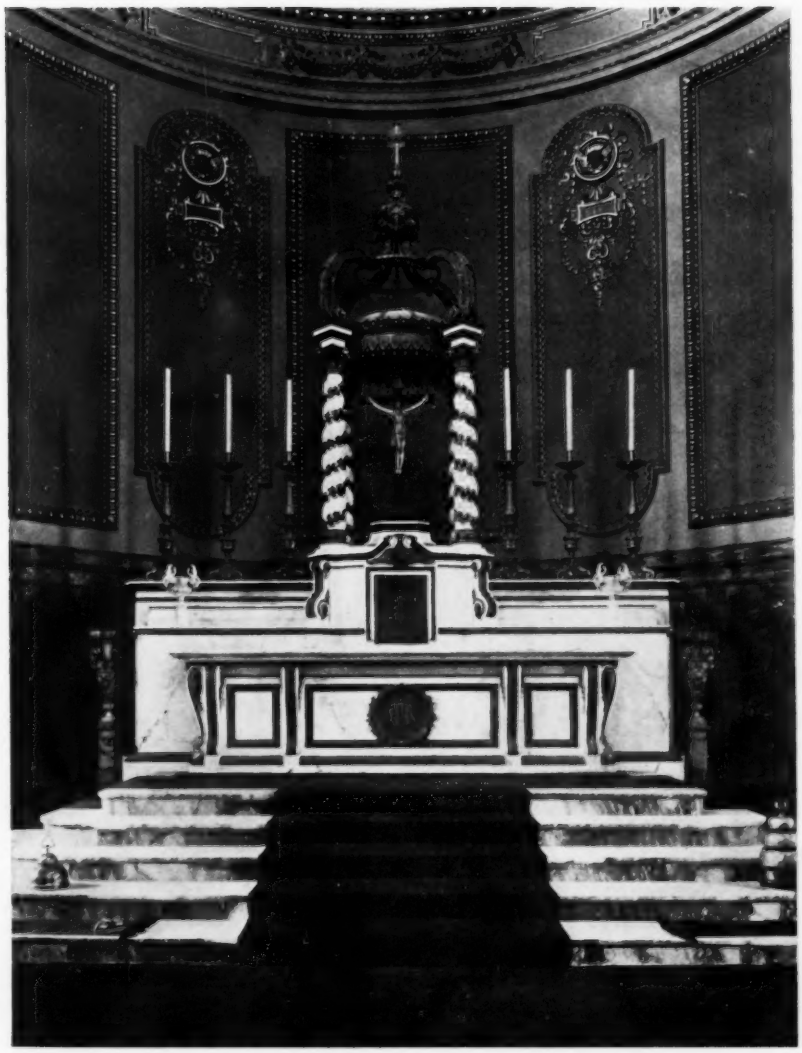
SOME EXAMPLES OF MODERN ORNAMENTAL WORK IN METALS





SCREEN IN ST. MARK'S CHURCH, PHILADELPHIA, PA.

Executed by the Sterling Bronze Co. Cope & Stewardson, Architects.



ALTAR PIECE—CHURCH OF ST. IGNATIUS, NEW YORK CITY.
Executed by the Gorham Manufacturing Co.

DETAIL OF THE MAIN DOOR.

(Building of the Land Title and Trust Company, Philadelphia, Pa.)

Executed by the Chicago Ornamental Iron Works. D. H. Burnham & Co., Architects.

BRONZE TABLET.

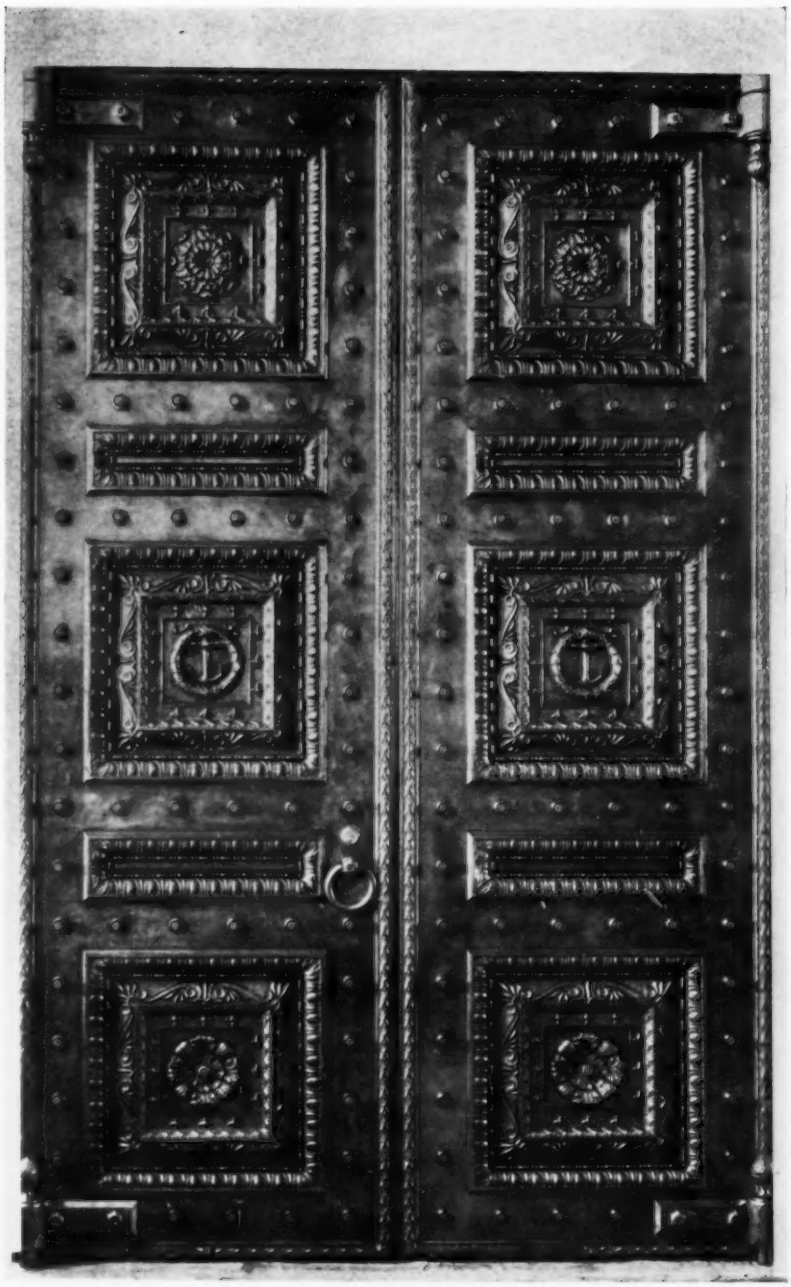
Executed by W. S. Tyler Co. Hubbel & Benes, Architects.

BRONZE DOORS.
Illinois Trust and Savings Bank.
Executed by Winslow Bros. & Co. D. H. Burnham & Co., Architects.

SCREEN.

Executed by C. Colnik Manufacturing Co.

STANDARD FOR ELECTRIC LAMPS OF WROUGHT IRON.
Executed by Sterling Bronze Co.



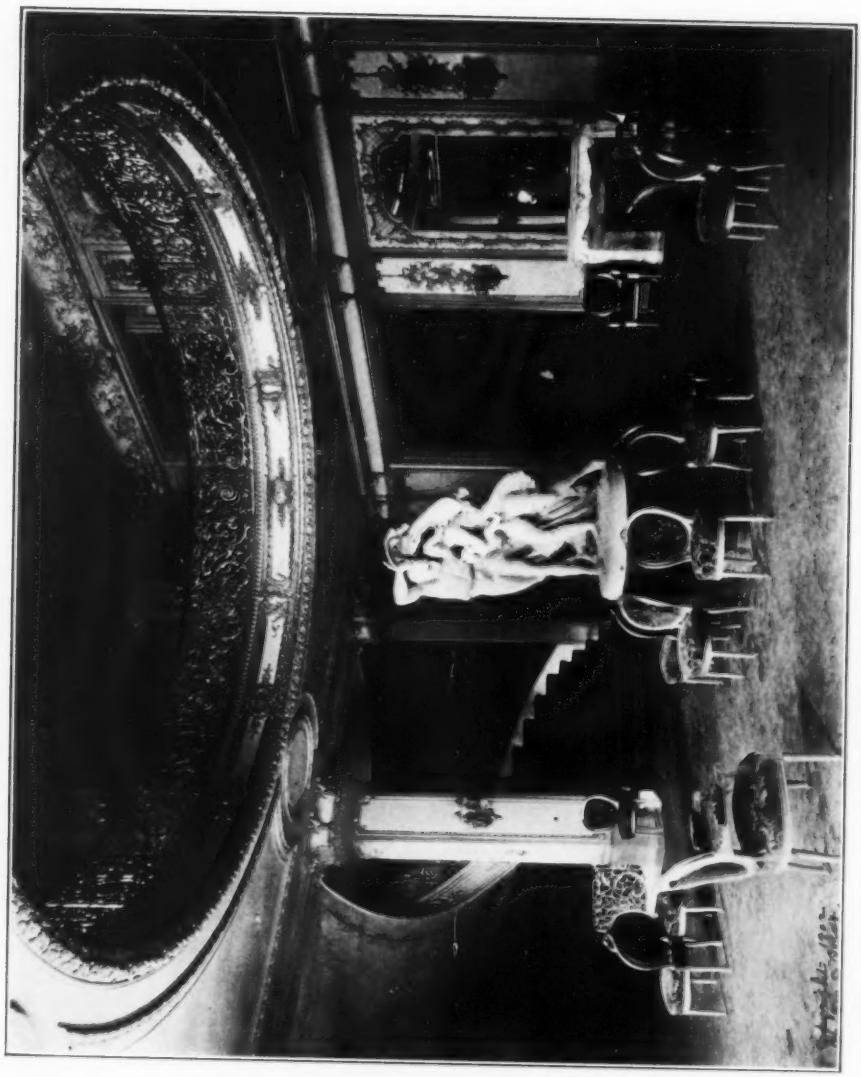
BRONZE DOORS.

Executed by Gorham Manufacturing Co.

WROUGHT-IRON DOORS.

Executed by William H. Jackson Company.

GRILLE IN SMITHSONIAN INSTITUTE, WASHINGTON, D. C.
Executed by John Williams.



ROOM IN WALDORF-ASTORIA.

Ornamental metal-work by Richey, Brown & Donald. H. J. Hardenbergh, Architect.

THE FIRST CONCRETE SKYSCRAPER.

WHILE it may be some time before all the lessons of the great Baltimore fire will have been learned, one point, at least, appears to have been clearly demonstrated, which is that concrete-steel construction went through the terrible ordeal with remarkable results, and has thereby demonstrated its superiority as structural material for buildings. A small four-story building with a cast-iron front located in the heart of the burned district, was originally a brick building, with ordinary wooden joist floors. Recently, however, the floors were taken out and the entire interior reconstructed with concrete-steel columns, girders and floors, while the brick walls were retained for the enclosure of the building. The fire demolished a large portion of the walls, but the entire concrete construction, columns, girders and floors, remained standing uninjured by the fire and intact, except some slight bruises inflicted by falling walls. What a pity that the walls, too, had not been of concrete; for in such case the result must surely have been very different.

In view, therefore, of the remarkable test which this wonderful material so successfully withstood, the entire architectural and engineering professions, as well as the builders and the building public, should be interested to know that while concrete-steel is not by any means a new material, or rather combination of materials, and has been seriously taken up only in recent years, it has nevertheless long since passed the experimental stage, and fully demonstrated its general adaptability to the many complex problems of modern building, even to the most exacting of all; the skyscraper—the first example of which is the Ingalls Building, built on the northeast corner of Fourth and Vine Streets, Cincinnati, Ohio. It is, indeed, an accomplished fact—the first concrete skyscraper. It was begun in the fall of 1902 and has just been completed, having required in its erection but very little longer time than the standard steel cage type would have done, and at probably somewhat less cost. It is but fair to add, also, that in the next building of this kind not only the cost, but also the time required for completion, would undoubtedly be considerably reduced; and without question this process will be carried to a much higher development as the material comes to be more thoroughly studied and understood. The rapidly increasing production of high-grade Portland cement in this country cannot fail to help further in reducing the cost and insuring the popularity of the construction.

THE INGALLS BUILDING.

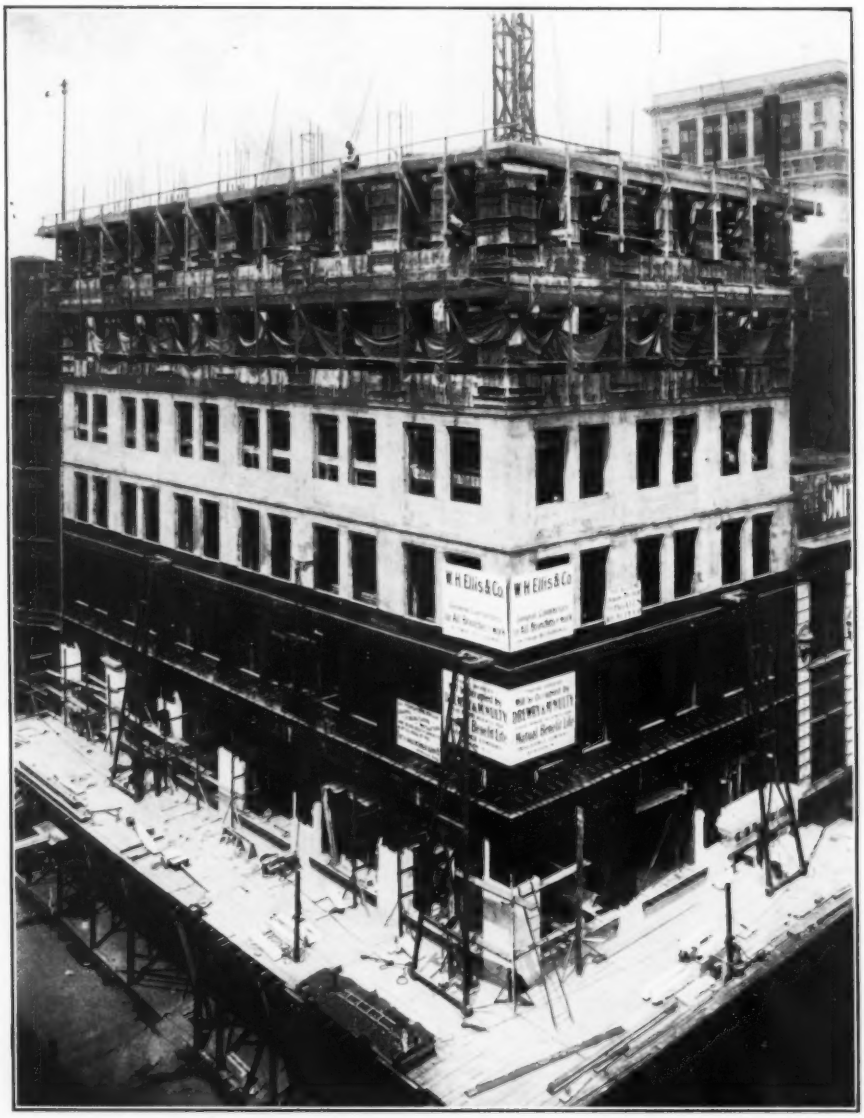
Cincinnati, Ohio. Elzner & Anderson, Architects.

The Ingalls Building occupies the entire area of a corner lot, 50x100 feet, and is fifteen stories and a full attic, practically sixteen stories, rising to a height of 210 feet above the sidewalks. The one-half of the basement is the usual twelve feet deep; but the other half, containing the power plant, is twenty feet deep. The foundations extend five feet below this, so that the entire height of the structure from the bottom of the foundation is 235 feet, entirely concrete-steel. In fact, it is a concrete box of 8-inch walls, with concrete floors and roof, concrete beams, concrete columns, concrete stairs; the whole entirely devoid of the usual I-beams, Z-bars, angle irons, plates, rivets and bolts. It consists merely of bars embedded in concrete, with the ends interlaced, making actually a complete concrete monolith of the entire building, covered on the exterior with a veneer from four to six inches thick of white marble for the lower three stories, glazed gray brick for the next eleven, and glazed white terra cotta for the top story and cornice.

The principles of concrete-steel are rapidly coming to be fairly well understood, especially so by the structural engineers; for, after all, it is primarily an engineering problem. But without question, a large proportion of the profession, and certainly the great majority of architects have not as yet had actual experience in its use, and perhaps have not given the subject the serious consideration which it deserves.

A brief description, therefore, may not be out of place at this point. In the first place then, let it be understood that for structural purposes the concrete should be made of strictly high-grade Portland cement, clean sand, containing, if possible, grains of variable size, and crushed stone or gravel. In the superstructure, limestone should not be used, as it would too readily be injured in a fire. Such concrete should be dense, that is to say, the voids should be well filled, and all thoroughly tamped. Enough water should be used to make a soft concrete, so as to insure perfect contact with the steel bars; for concrete-steel, it must be remembered, depends for its strength chiefly upon the adhesion between the concrete and the steel. The concrete itself is figured only in compression, never in tension; and wherever tension occurs, this is to be taken up by the steel bars; as, for instance, in the bottom of a beam or footing, or near the surface of a column where wind or other bending stresses must be considered. The compression in columns is taken up chiefly by the concrete; but where this is not sufficient, vertical steel bars are inserted, which, however, must be thoroughly tied together to prevent spreading. Shearing stresses in beams and columns are taken up first by the concrete, but this must be reinforced by bars placed across the line of shear.

The floors are preferably made in slabs of uniform thickness and



THE INGALLS BUILDING.
Showing Method of Construction.

Cincinnati, Ohio. Elzner & Anderson, Architects.

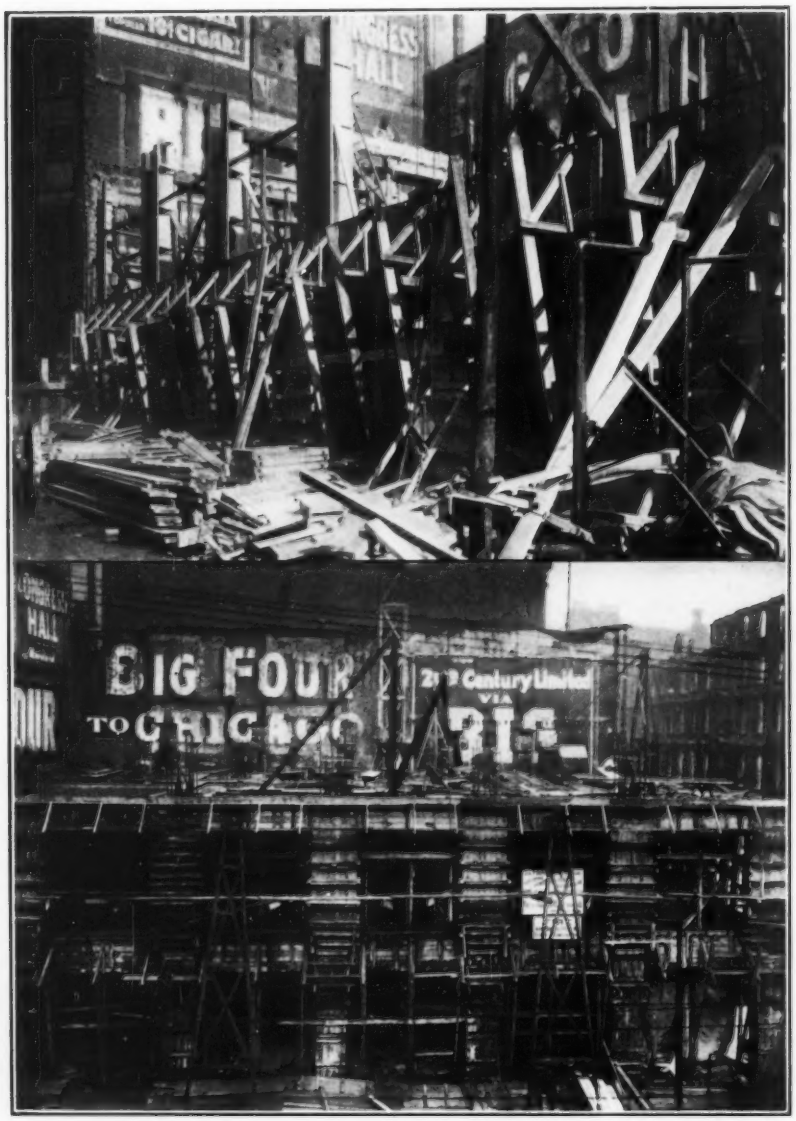
reinforced near the underside with bars of steel mesh of various forms. It is of utmost importance, however, that the amount of steel used should be determined by actual calculation, and not by guesswork or rule of thumb, as is apt to be the case. Walls, if used merely as curtain walls, may be as thin as three to four inches, or not more than six to eight inches, as may be required by the depth of the window box. They should, however, be reinforced by a network of bars, placed not over three or four feet apart both vertically and horizontally, to prevent shrinkage cracks.

In the Ingalls Building, described here, a system of cold-twisted square bars was used throughout. This gives excellent results, due to the greatly increased tensile strength of the bars after twisting, and the mechanical grip of the twisted bar on the concrete.

The floors are continuous slabs 5 inches thick, reinforced with a mesh of ¾-inch square twisted steel bars from 18 to 20 inches on centers in both directions and strengthened by a beam or rib across the center of the column bay of 16x32 feet, dividing this into two panels, each 16 feet square, without any other supporting beams.

The columns have stiffening bars placed on two opposite sides near the surface to take the wind strains. They are further reinforced near the center by compression bars, which take up all such load as may be required in excess of the carrying capacity of the concrete alone. These bars not being in tension need not be twisted, and accordingly plain round bars were used of various sizes, according to location, from 2½ to 3½ inches in the basement, diminishing in numbers and sizes in succeeding stories until they were reduced to 1-inch and then entirely abandoned at about the tenth floor, from which point on, the concrete was sufficient to do all the work. The interior or compression bars had the ends milled off and were joined just above the floor level by a sleeve of steam pipe, a trifle larger than the bars and grouted with cement. They were then tied together firmly at three or four points in the height by small bars bent around them. The exterior or wind bars were joined in the center of the story height by splices, which consisted of several smallers bars wired about the joint. The columns were further reinforced by means of hoops of ¼-inch bars, placed around all the bars near the surface at intervals of from 12 to 18 inches throughout the height. As stated before, these prevent the spreading of the bars and take up the excess of vertical shear.

The question has been asked as to how the girders were connected to the columns. Very simple, indeed; the girder bars merely extend in between the column bars and the concrete of the one being monolithic with that of the other completes and perfects the connection, than which nothing could be more secure. The walls

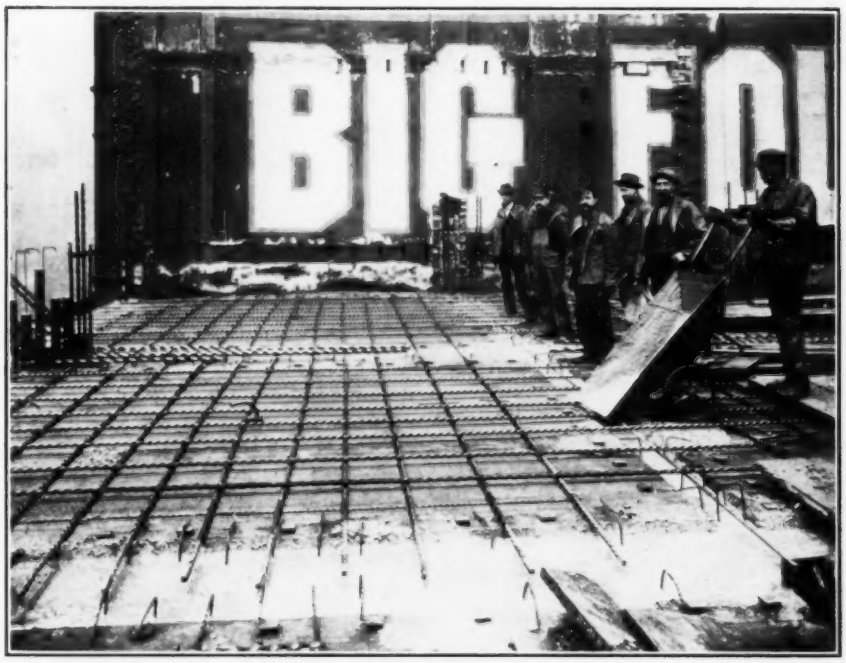


THE INGALLS BUILDING.
Showing Method of Construction.

Cincinnati, Ohio. Elzner & Anderson, Architects.

above the piers of the lower two stories are 8 inches thick and afford the best possible system of wind bracing, inasmuch as the entire mass between the head of one window and the sill of the one next above is figured as a beam with rods top and bottom.

The method of supporting the exterior facing of marble, brick, or terra cotta, as the case may be, is as simple as it is effective. In the case of the marblework or granite, if such be used, for the lower stories, a concrete ledge or corbel is formed around the



THE INGALLS BUILDING.
Showing Method of Floor Construction.
Cincinnati, Ohio. Elzner & Anderson, Architects.

piers just below the sidewalk level, and these afford the necessary foundation for such face work.

In the case of the face brick above, the various floor slabs are merely extended out beyond the wall three inches. This forms a ledge for the support of the brick facing, each story being independent of the other, and is afterward covered with 1-inch tile, or whatever may be desired.

All the face work, however, is securely anchored by means of round wrought-iron bars which are built into the concrete by boring holes of proper size through the wood forms and inserting the anchors, which are perfectly straight at the time, but are afterwards

bent to suit; they must be straight so that the form work can be drawn over them upon being removed, when the concrete has sufficiently set.

In case of the cornice, which is of terra cotta, the roof slab was simply projected out as a cantilever to the required distance, which in this case was 5 feet. Sleeves of sheet iron were inserted at proper points and remained built into the concrete, and bolts to secure the terra cotta were afterward inserted through them and grouted in place.

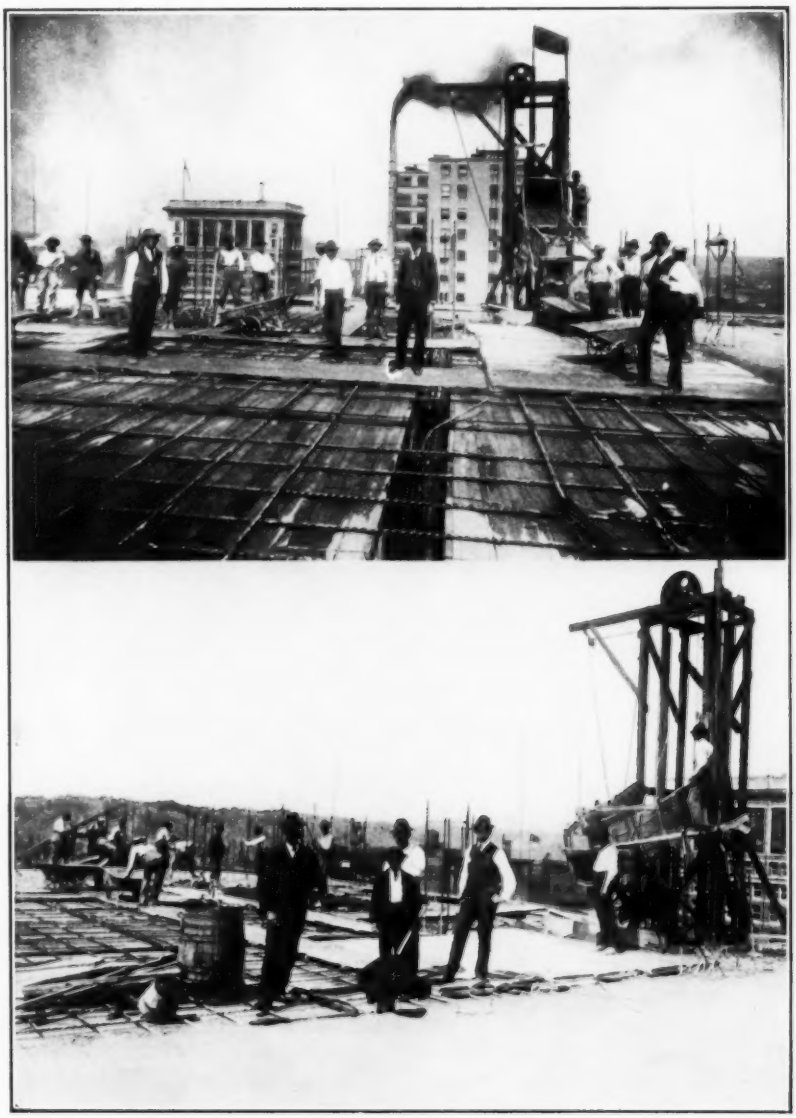
In a brief sketch like this, it would be impossible to describe the points of advantage peculiar to this method of construction. There are many, and it might suffice to say that numerous new problems are encountered, and while they are all solved in a satisfactory manner, it must be remembered that this is the first attempt to make a consistent application of the concrete-steel system to the skyscraper problem. It has apparently been eminently satisfactory, yet it is not claimed to be final in all respects, and there will undoubtedly be marked improvements here and there as the system develops.

Let us hope that engineers and architects may apply themselves earnestly to the question, so that little time may be lost in perfecting at last a rational system of construction, which will make impossible such disastrous fires as that of Baltimore.

During the progress of the work on the Ingalls Building, some men of great ability who should have known better, predicted that the structure would never reach the roof, and that even if it did, it would certainly crack all to pieces by shrinkage and that it could not possibly withstand wind pressure. The facts are that it did reach the roof; that there are no shrinkage cracks, and that the building not only has not blown over, but that in the highest winds, there is not even a perceptible tremor, and that too with concrete walls only eight inches thick from bottom to top, and the floors but five inches thick in unbroken slabs sixteen feet square, a portion of which on the second floor carries a bank vault weighing nearly a hundred tons.

Such and other equally absurd arguments having fallen to the ground. The opponents of this construction pointed first to what they were pleased to call excessively large columns; then they referred to failures of various concrete constructions, and finally discovered that the steel building could be erected more rapidly than the concrete one.

These arguments, which appear to be the only ones left to the opponents of concrete, are really not more substantial than the others. In the first place, the column design, especially in the lower portion of the structure, was almost wholly a new proposition, and

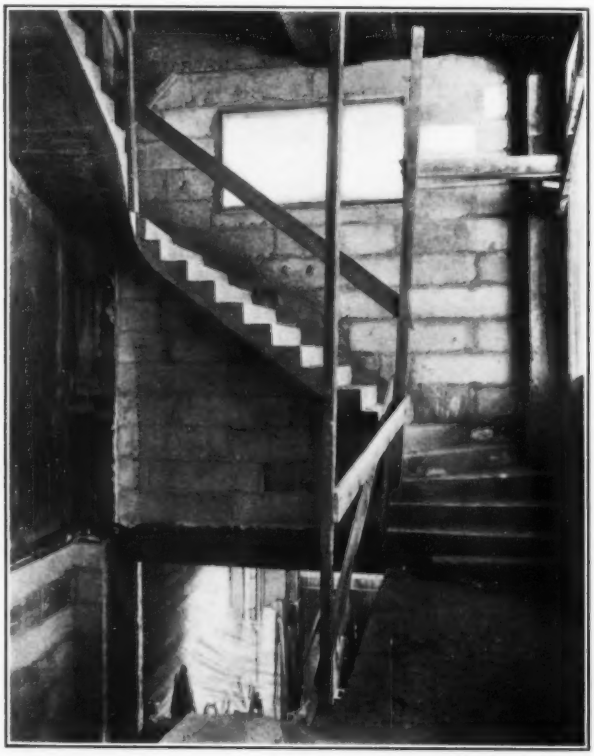


THE INGALLS BUILDING.

Showing Method of Construction.

Cincinnati, Ohio — Elzner & Anderson, Architects.

was largely controlled by a spirit of conservatism, which was but natural in so radical a departure. As a matter of fact the columns might readily be made much smaller, perhaps not much larger than a properly fireproofed steel column. Manifestly the sizes of concrete structural members have not yet been reduced to the most economical basis, and it may, and undoubtedly will, require some little time, for since it is a comparatively new field of engineering, it must have time to grow. But that it will grow and will mature



THE INGALLS BUILDING.
Showing Method of Stair Construction.
Cincinnati, Ohio. Elzner & Anderson, Architects.

just as steel engineering did, there can be no doubt, for we have but to look at the research of such men as Considère and others, to marvel at the possibilities in store for us with this remarkable material.

Regarding the failures of concrete constructions which have occurred and which are much to be deplored, it is only fair to say that the popularity of the new method has been so great that anybody and everybody has rushed into it, and as will happen in such events,

without stopping to secure experienced foremen or engineers, who, by the way, must naturally be scarce in these first few years of development. But time will correct all this, as it will also the last argument: that of increased facility of erection. If the first concrete skyscraper required only a few months longer in erection than did the most recent one in steel, which has passed through nearly a generation of development, it cannot be difficult to believe that in a few years this slight difference in time will not only disappear, but that in this, as in all other points, the race will be to the concrete.

Now let us view the question from a purely architectural standpoint. We have been told over and over again that the skyscraper problem still remains unsolved. The critics will have it that there must be no imitation or representation of masonry construction, and that in some way or other still to be discovered or invented, the steel skeleton must find adequate expression through its fireproof casings. Perhaps so; but it will be a difficult thing to do with entire consistency. Again, if the dress is not to be an imitation, even of masonry, then it is clear that we cannot well have a dress at all, and be truthful in our design. And since the building laws very properly require the steel skeleton to be covered, we cannot escape the use of an architectural dress. In other words, as long as the visible architecture of the steel skeleton building will, as it evidently must, remain a mere sham construction, the critics will never be able to accord it a place in true art.

The only way out of the dilemma, therefore, would seem to turn to concrete, and see what solution this construction has to offer. Already it is beginning to assert itself; slowly, of course, but surely. Before long it will enter into friendly rivalry with steel; then will follow sharp competition, and finally a struggle for popularity. Why?

Because, first of all, concrete will form a better investment. Did it not pass through the terrible Baltimore fire better than steel? And this fact carries with it a long story of incidental fire losses, greater endurance, preservation, and what not?

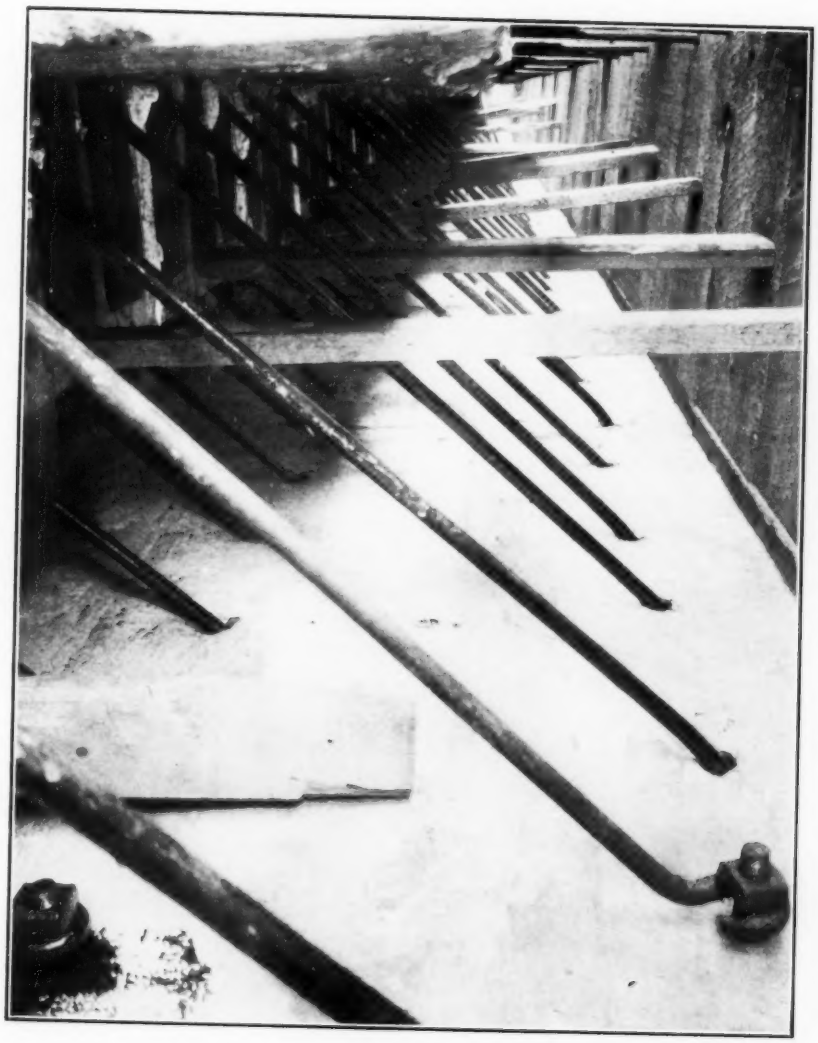
Then, too, it will be considerably cheaper. It requires a great deal of capital these days, and always will, to equip and operate a steel plant, and the price of structural steel has been pretty well settled, and is not likely ever to be very much less than it has been. Moreover, it can be produced only in certain limited locations, which involves long hauls and heavy freight bills.

On the other hand, the manufacture of Portland cement involves a comparatively small amount of capital and very small operating expenses. Deposits of suitable material are being discovered everywhere in all parts of the country (and we are only interested in this

THE INGALLS BUILDING.
Showing Method of Construction.

Cincinnati, Ohio.

Elzner & Anderson, Architects.



THE INGALLS BUILDING.
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country at present), and cement plants are springing up in most surprising numbers. This activity is bound to continue in an increasing ratio as the demand for this wonderful material grows. It follows, therefore, that production is not susceptible to the control of combines to such an extent as is the case with steel; the result of which naturally will be relatively lower prices for cement.

Now to turn to the third argument in behalf of concrete. This will appeal to our friends the critics, for it deals with the purely architectural question, which, after all, is the greatest and highest and will endure long after all others have been silenced. Inasmuch as a concrete building is not built up like masonry, but is actually poured into a mould in its entirety, it at once becomes a monolithic structure, every particle of which is doing structural duty; and this can be said truthfully and without hesitation. Now then, it is not incumbent upon us to face the concrete with marble, or brick and terra cotta, as was done in the Ingalls Building, for reasons of momentary expediency, for as the state of art advances, the architectural forms, mouldings and what not, will be incorporated with the moulds for the structural work, and upon removing the form work, the surface of the exposed concrete, will be given the desired finish of rubbing or tooling, as the case may be. Thus we will have a truly rational architecture, in which there is no sham, no deception, a solid thing, no joints, every member incorporated with and a part of a living body; living because it is straining every particle of its substance in the performance of a great work, in its own self-preservation; a living architecture, indeed, and a rational one in every sense of the word, which will rise far above criticism and endure as long as the hands of man shall not be raised to its destruction.

A. O. Elzner.

METAL WREATH.
Executed by the Gorham Manufacturing Co.

THE PRESENT SYSTEM OF ARCHITECTS' CHARGES.

IN the course of the remarkable expansion which has placed the United States in its present commanding position, its building industry, as a natural consequence, has undergone radical changes.

In spite of this fact the general methods of designing and executing work, so far as it devolves upon the architect, remain to a great extent as before, and it would therefore seem reasonable to assume that the present custom of employing consulting architects as confidential agents of owners, and the present manner of letting work to builders may be considered as having stood every test and as likely to be adhered to in general features for an indefinite period to come.

Experience has taught, however, that as between the architect and the builder, the work is not in all respects divided in an entirely logical and reasonable manner, in that certain parts of the detail drawings and outlays (shop outlays, setting plans, etc.) have been removed from their natural connections in the architect's office and now form part of the builder's work, because the present antiquated system of architects' charges render it impossible otherwise to provide for them.

Under modern conditions full and complete drawings and outlays and ample superintendence and testing constitute the requisites of speedy and economical building. This has been amply illustrated by past experience in the building trades themselves as well as in the work of civil and mechanical engineering, and it appears equally logical and, in fact, self-evident, that this work and the entailed responsibility should be placed upon the architect.

This can be accomplished by in some way establishing a rational system of architects' charges based on the elements of services rendered or else by leaving the question to be regulated by natural laws.

Our present system, if it deserves that name, is in reality nothing but an obsolete rule of the 18th century established for the public buildings of France as a fair average for a rather uniform class of work which, therefore, takes no account whatever of the infinite variety of modern types of buildings, conditions of employment, individual requirements, standing of practitioner, etc., and the application of which to modern work is indeed, as George Edmund Street is said to have remarked even fifty years ago, "a great absurdity."

History of the Five Per Cent. Rule.

Under the schedule established by the American Institute of Architects, the compensation for so-called full services is fixed at five per cent. on the cost. Historically, percentage rules and more particularly the 5 per cent rule originally came into being as a fair average for the public buildings of France. Previous to the end of the 18th century all architects were probably paid salaries or grants. However, with the beginning of the architectural profession in the modern sense of the word during the 18th century it seems to have become customary in France to pay the architects for public work five per cent. on the cost as a fair average for a class of architects and a class of work very nearly uniform in standing and character. This custom was enacted into law during the French Revolution, was adopted by most architectural bodies as the only precedent available and gradually spread to other countries. It was probably the best that could be done under the circumstances then prevailing. But at the present day, while not underestimating the past usefulness of the five per cent. rule, the impression is undoubtedly gaining ground, that the architectural profession has entirely outgrown the necessity for it; that it is, in fact, now difficult of application, unjust in its workings and productive of conditions operating to the distinct injury of the building interests of the country at large.

It may be observed, at this juncture, that European and American conditions in the architectural profession are not at all identical, and neither are those of the building trades. The conditions of architects' employment vary considerably in the different European countries and are everywhere different from those prevailing in the United States; in England, for instance, the five per cent. rule really means seven and one-half per cent. in addition to the wages of the superintendent, two and one-half per cent. on the cost being added for quantity surveying..

In order to meet the objections to percentage schedules, amendments and classifications have been tried, in some European countries on a very elaborate scale. But the difficulties of charging so as to meet the ever-increasing complexity of conditions determining architects' employment are steadily multiplying and it is always an open question to what extent owners would accept amendments.

The very fact of the classification shows also that the five per cent. schedule cannot be applied to all classes of buildings, and that the originally fair average for public buildings in France is not fair and reasonable for all classes of buildings to-day. At the same time it is clear that the establishing of several percentage rules instead of one must be a fruitful source of trouble and contentions.

The Present Schedule in Its Application.

We referred above to the fact that the five per cent. rule originally represented an average and probably a fair average for services rendered. Such is not the case under modern conditions. Heating, plumbing, electric wiring, steel constructions and all the thousand and one improvements and appliances now to be located and studied to the great complication of plans did not exist. Each locality possessed only one or two materials of each kind, as a rule, and the present enormous market of materials and variety of constructions were yet to come. Under present conditions a greatly increased amount of drawing, supervision and other work has thus gradually been added to the architect's work. On the other hand, the changed conditions which have brought it about have also made the services of capable architects exceedingly valuable in a new direction, in that the selection of materials and methods of construction for a given purpose, necessarily leave a wide scope for exercise of judgment in the accomplishment of the greatest possible results with the least expenditure.

The architects of the United States have thus gradually come face to face with a new condition, vastly increasing their work, outlays and responsibilities and due mainly to the following conditions, namely:

1. The new systems of construction and complicated appliances.
2. The variety of materials available.
3. The speed of execution demanded.
4. The increased cost of labor—to offset which a better organization of the builders work became necessary with increased shop work and reduced field work.

At the same time the organization of a building enterprise gradually became impossible except on the basis of complete and well-studied architects' plans. While the work and responsibility of the architect were thus vastly increased, it is also true that buildings became more expensive because more complicated, and in many cases the present schedule is fairly satisfactory. But in the great majority of cases it is not so, and as between the different classes of buildings it is unfair in operation, the simple constructions and work of repetition being vastly more remunerative than complicated structures and work requiring careful study in all its parts, which is, of course, the exact reverse of what a rational schedule should accomplish. It also provides for a supervision which is in reality insufficient and therefore unworkable.

I think there can be no question that a more complete system of shop drawings would both cheapen buildings and shorten the time of construction and the architect should be put in a position to

prepare these drawings absolutely complete and ready for the workmen, which is not now the case. In some cases the arrangement I here suggest has proved indispensable, for instance in the matter of steel constructions, etc., where the specifications require the contractor to include in his bid the cost of the shop drawings at a certain price per ton, the engineer to be appointed by the architect.

The Principle of Percentage Schedules.

Another series of objectionable features may be said to have their origin in the fundamental fact that the five per cent. rule, which originally was arrived at as a fair average has now been raised to the dignity of a principle. Unfortunately it is not defensible as such. It is neither an axiom nor a tenet rendered sacred by general usage.

In the course of time, in certain lines of business, like banking, real estate, etc., certain transactions have been fixed by law or custom at a certain percentage on the amount involved. But architects' services are in no sense brokerage. Other methods of regulating wages and employment are those adopted by the ancient guilds and the modern labor unions, but architects are not employed by the day. How, then, can we defend the implied denial of difference in skill, in experience, in talent and special fitness for a given task and the placing of the official stamp of the American Institute of Architects upon the proposition that, as far as it is concerned, the services of the novice are as valuable as those of the experienced and expert, those of the well educated as good as those of the less well trained, those of the successful no better than those of the unsuccessful. In spite of the fact that the schedule is marked "Minimum Schedule," this certainly bars the successful practitioner in the great majority of cases from obtaining the increased price which naturally should be his, limiting him to the one reward of doing more work with its added cares and responsibilities. This point is extremely important.

There can be no question that, even with the most efficient organization, the amount of work which one man can directly inspire and carry out is small compared to that handled by many offices to-day, and, conversely it follows that the successful architect of to-day gives his name to and assumes the responsibility for a large amount of work of which he is not the real author. There is no other road open to him. From the point of view of public policy this is certainly not a desirable condition, and in view of the fees paid other professions and the sums entrusted to successful architects of the present day, entailing corresponding responsibilities, it would seem fair to infer that the five per cent. rule is the main, if not the only obstacle to successful architects obtaining such fees for im-

portant work as would enable them to limit their work to what they can personally perform with proper assistance.

The five per cent. schedule also stamps with the Institute's approval the principle that the services and ideas of an architect are valuable in proportion to the cost of carrying them into execution. On this principle advice becomes valuable only when expensive to follow. The conflict between the original conditions and our own is here most apparent. Viewed as an average for public buildings in France it appears quite fair that a large building should earn a proportionately greater fee than a small one. Under the complex conditions of modern times the same rule becomes, in many cases, absurd, as for instance in many alterations involving a very small outlay yet compelling on the part of the architect a complete study of the entire building or plant and on the part of the owner a benefit out of all proportion to the fee sanctioned by the schedule.

A design in a cheap material earns a double fee by being executed in a material twice as expensive, and architects, under this rule, are paid for wasting their clients' money and punished in pocket for saving it. Under the present contract system the working of this rule becomes particularly vicious in the following manner, i. e., A set of plans and specifications necessarily embrace a large amount of work of many different trades. Therefore the degree of care, skill, experience and familiarity with the working processes and other conditions of all these trades, which is employed in the architects'work must needs to a large extent influence the estimates obtained and sums are easily saved or wasted in this way which far exceed the architects' commission.

Under the present schedule the exercise of such care and skill operates to reduce the architect's commission. If he manages to defeat an unjust claim or secures good terms for his clients, he is at the same time conscious that his efforts will reduce his own commissions.

Analysis of the Value of Architects' Work.

In considering the different ways in which architects' services influence the cost of buildings and their permanent value we may view these services under two heads, namely:

1. In their bearing on the building operation itself and preparations for the same, and

2. As a factor in the permanent or investment value of property.

The immediate value for the prosecution of the building operation itself is apparent and should be easily understood. But few realize that the permanent or investment value of buildings de-

pends to a large extent on the architect. Yet, such is the case nevertheless. The immediate value during the building operations may be considered under several heads, namely:

1. In safe-guarding the interests of the owner in the letting of the work and during the construction.

2. In applying expert knowledge of methods of construction and materials available towards securing them for clients the greatest result for the smallest possible outlay.

3. In so adapting designs to the conditions which they are to serve as to secure the greatest possible efficiency, rentability, economy of management, etc.

4. In the quality of art work accomplished in design and execution.

In point of any one of the heads mentioned the value of a design will and must vary according to talent, skill, experience, etc., and once the public were taught to look for it it would soon register its experience in records for each architect on which his fee would to some extent depend.

It becomes apparent at first glance that several of the factors which are of immediate value will also influence the investment value of property. So will, for instance, the care exercised in obtaining conscientious work soon make itself felt in the repair bills and generally in the wearing qualities of constructions and their permanency, while the degree to which a design is adapted to its purpose will in many cases absolutely decide the investment value of the property. This is self evident in apartment houses, hotels and office buildings, but it is equally important in residences and even in factories in which latter a badly studied plan imposes a permanent tax of wasted labor, often a very serious one.

The rate of insurance has also been found to rest, to a large extent, in the architects' hands and the amounts saved and wasted are doubly serious because levied both on the cost of buildings and their contents.

In the matter of residences it is startling how quickly many so-called speculative dwellings decline in value, even in first-class neighborhoods, and it is equally surprising how well designed and well built houses satisfying all proper requirement will hold their value even under objectionable surroundings.

A thorough appreciation of the elements of architects' services and their bearing on results accomplished as well as a more satisfactory handling of working outlays would necessarily lead to a largely increased employment of experts and possibly to the establishment of specialties in the architectural profession itself.

Specialists in designing and specialists in executing work might not prove an unmixed evil. Such a division might be natural and

advantageous in cases, just as undoubtedly the greater number would remain "General Practitioners."

The selection of a professional adviser is largely made on personal grounds, and it would seem reasonable that a client should have an opportunity to obtain a design of recognized authorship in connection with his accustomed architect as his physician may call in another physician for consultation in important cases.

Architectural Competitions.

The recognition of the elements of service and the establishing of records and standards which it would entail and eventually specialties as mentioned, might possibly terminate the prevailing system of architectural competitions or at least keep it within reasonable bounds. Competition there must always be as a matter of course; it cannot and should not be avoided. It is an open question, however, whether the great majority of competitions are successful or profitable from any point of view. A great many of our least successful buildings are undoubtedly results of competitions; the bulk of our best work probably not. Broadly speaking it is, perhaps, not unfair to say that the competition system as now practised has not been generally successful, while the practise of selecting architects on their records without competition seems to have produced the best results.

Without considering the great number of competitions judged by laymen or those decided by outside influence it would appear that our competitions are very liable to become contests of draughtsmanship. In the other professions competition is essentially as between records for work done, and it is perhaps true even in the architectural profession that the architects of the bulk of the best work have, as a matter of fact, been selected on that principle.

The fact that so many competitions have been contests of draughtsmanship very naturally led to the appointment of teachers as judges. Teachers, however, follow a vocation entirely separate and distinct from that of practising architects and it is perfectly natural that both their point of view and their sympathies should be different. It should also be born in mind that draughtsmanship is only a part of an architect's work, and as history has shown in several important instances not an indispensable one at that. Architects of the very highest order have sometimes been indifferent draughtsmen, while some of the most accomplished draughtsmen have executed work as bad as their draughtsmanship was good.

Arne Dehli.

Author of "Details of Byzantine Ornament" and of "The Norman Monuments of Palermo and Environs."

THE HOTEL ST. REGIS.

Fifth Avenue and Fifty-fifth Street, New York City.

Trowbridge & Livingston, Architects.

THE ST. REGIS—THE BEST TYPE OF METROPOLITAN HOTEL.

I.

THE HOTEL ST. REGIS is peculiarly worthy of notice as an architectural and building achievement, because it establishes a new and higher standard for the construction and decoration of hotels in a city that in this department of building establishes the standard for the whole country. For the third time in the history of the Astor family one of its members has had a hotel built, which is in its way different from and better than any other hotel then existing in the country. Before the war the old Astor House on lower Broadway was the boast of the city and the wonder of foreign travelers. Much more recently the Waldorf and then the Waldorf-Astoria became the great metropolitan hotel, and the place to which the birds of passage, particularly when their plumage was gay, liked to come in flocks. And now the Hotel St. Regis, which is owned by Col. John Jacob Astor, fulfils once again the family tradition of owning and building what is assuredly destined to become the most distinctively metropolitan hotel of its day.

The Hotel St. Regis, however, is metropolitan with a difference. It does not claim distinction because of its huge size or because of the enormous dimensions of the plot on which it is built. The site of the building, as originally planned, did not contain more than 12,500 square feet, and although about 7,500 more have been added in an extension now being built on 55th St., the whole plot includes less than 20,000 square feet, against about 70,000 for the Waldorf-Astoria, almost 35,000 for the new Hotel Brunswick, and 44,000 for the Fifth Ave. At the present time it is, with its eighteen stories, the highest hotel building open for business in New York City, but its height will be equalled or exceeded by the Hotel Brunswick, by the new Imperial and the Belmont. The kind of distinction at which the designers of the Hotel St. Regis aimed is indicated by the location on which it is built. The corner of 55th St. and 5th Ave. is situated, not in the business or amusement part of the city, in order to attract the attention of a miscellaneous crowd of people who have a little money to spend. It is situated at the southern end of the most exclusive and expensive residential district, sufficiently convenient to the good shops, the theatres and the like, yet at the same time plainly withdrawn from the ordinary places of popular resort. It was not intended, consequently, to cater to the thousand and one New Yorkers and

transient visitors who want a big show for either a good deal or a very little money. It is intended for a class of people, both New Yorkers and transients, who want absolutely the best quality of hotel accommodation, and who do not mind paying for it,—who want, that is, a quiet but convenient location, rooms of fair size and finished in the best prevailing manner, the best service and cooking that New York can afford, and an atmosphere of good taste and distinction.

This idea of establishing a new standard of excellence in hotel accommodation runs through all the details and dispositions of the building. The structure, the equipment, the materials in which it is finished, the design of the decorations, and the uniform good taste of the furnishing—in all these respects the builders of the Hotel St. Regis can claim a superiority in quality—certainly over any hotel in this country, and probably over any hotel in the world. Just wherein this superiority in quality consists will come out sufficiently in the course of this article, but what I want to insist upon here is that it is the success of this attempt to establish a new standard of excellence in the arrangement, the outfit, the decorations and the appointments of the hotel which justifies my preliminary statement that the hotel will become the distinctively metropolitan hotel of its day. Anyone who understands the contemporary growth of New York must perceive that the attempt to establish new and better standards of design and decoration has been profoundly characteristic of the building movement of the past few years, and that this attempt has been more characteristic of its residential building than that of any other class. New York has become, that is, more and more the financial centre of the country, the rich man's city, and its precedence as the rich man's city has received full expression in the large number of costly and handsome residences which have recently been erected. In the Hotel St. Regis the standards of quality which have been established in these residences have been transferred to a hotel, and have even in some respects been transcended. By a happy combination of circumstances, the architects, Messrs. Trowbridge and Livingston; the owner, Col. John Jacob Astor; the lessee, Mr. R. M. Haan, and the contractors, under the general direction of Messrs. Marc Eidlitz & Son, were all united upon the same idea, and neither time, expense, care or talent were spared in order to make the achievement satisfactory. Opinions may differ as to the necessity of some of the expenditures, or the complete success of some of the details, but no one can doubt that, on the whole, the standard has been the highest attainable, and the result need not fear comparison even with such buildings as the University or Union Clubhouses.

II.

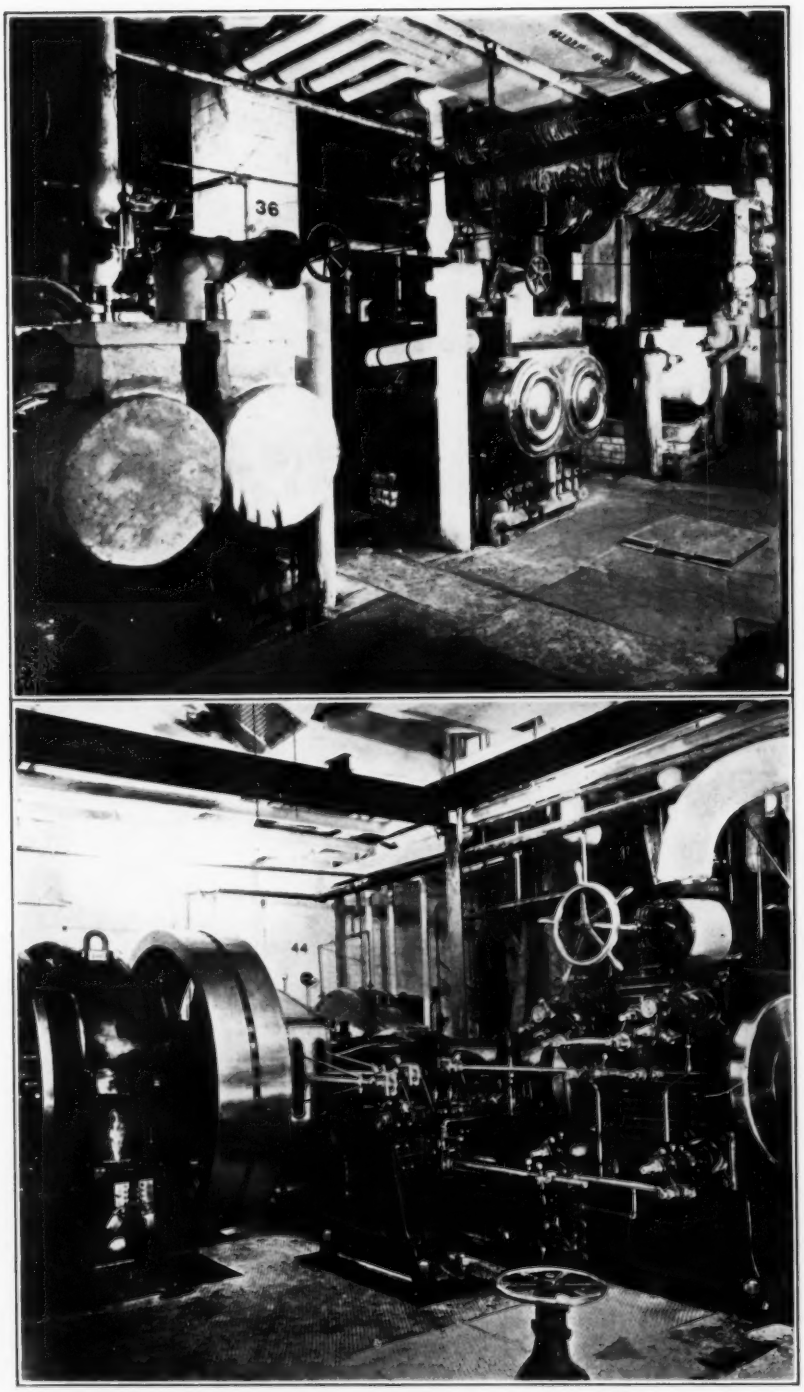
In considering the design of an important building it is extremely interesting to understand precisely what the architect was seeking to accomplish, and, so far as the Hotel St. Regis is concerned, we have the advantage of a statement of his purpose by Mr. Trowbridge himself, published last spring in the proceedings of the "Société des Architectes Diplomés." Mr. Trowbridge's explanation is intended for Frenchmen, who are not supposed to understand the inevitable conditions which confront the designer of a "sky-scraper," but it describes so well the point of view from which the intelligent American architect may approach such a problem that it will be almost as instructive to Americans. The imperative conditions of his problem, according to Mr. Trowbridge, consisted of sheer walls, without breaks or "decrochments," no base or substructure other than can be obtained by the treatment of the masonry, and the building being a hotel, a battery of small windows above, with larger openings and consequently less wall below. At the same time, this building, so different from the traditional dwelling-house, had to be given somewhat the character of a habitation; it had to awaken the associations of domestic rather than commercial architecture. To this end no help was to be derived from the openings which were made simply and frankly of the size and number necessary to light properly the rooms of the hotel; but something of the character of a residential building was obtained by the treatment of the upper stories and the roof. It has been the ordinary custom to carry up the walls of high buildings to the very top, crowning the edifice after the manner of lower buildings by a heavy cornice, generally of sheet iron, with a parapet and flat roof; but this method of terminating a tall building is open to several objections. It gives the structure a harsh sky-line, and an ungraceful shape; and as to the cornice, while the use of iron in imitation of stone is unworthy of consideration, it is impossible to give a stone cornice a projection proportionate to the height of the building. Consequently a roof was considered the proper termination, both as being more pleasing and more appropriate; and to mark the crowning of the edifice in place of a cornice, a strong horizontal line was obtained by the projection of a balcony at the fifteenth floor. As to the proportion of the roof to the height of the building, it undoubtedly gives a shock to people accustomed to the corresponding proportions in lower buildings, but, as it has the propriety of being imperative, our eyes must and will accustom themselves to it in the course of time. At the lower part of the structure the effect of a base was obtained by adding a balcony at

the level of the third floor, and by courses of heavily rusticated masonry from the ground up to that level, while to give distinction and definition to the design the corners were decorated with double chenaux of flat rustication, accented at the base by "degringolades" of flowers and fruits.

It was not considered appropriate to bestow any very abundant ornamentation on the outside of such a building, which obtains its effect by its mass and surface rather than by superficial detail, but in designing such detail as it was deemed advisable to use, careful attention was paid to the fact that this building could be seen only from a considerable distance or from points near its base in the narrow streets on which it faces. It was important, therefore, first, that the silhouette of the mass, when seen from the distance, should be bold and picturesque, and that the ornament should be concentrated at a few salient points; and, secondly, that the projection of the detail should not be so great as to shut off the upper part of the building when looked at from the street below. The scale of the ornament was consequently a matter of extremely careful adjustment, so that not only it should count properly from the points of view from which it was seen, but that the soffits of all projecting members and the lines of the balconies should have their place in the general composition. At the same time, a good deal of freedom was used in designing the detail. Natural forms were copied with more or less accuracy, and new profiles for the mouldings were provided, together with new outlines for the balustrades, consols, keystones, and other ornament. The completed façade shows plainly the effect of this careful study. The building obtains its effect by its mass, by the emphasis of its lines at salient points, by the subordination of its detail, and by the rich, warm grey of the limestone of which it is constructed. It is as simple and monumental as an eighteen-story building should be, yet it preserves an appropriate relation to the traditions of residential architecture.

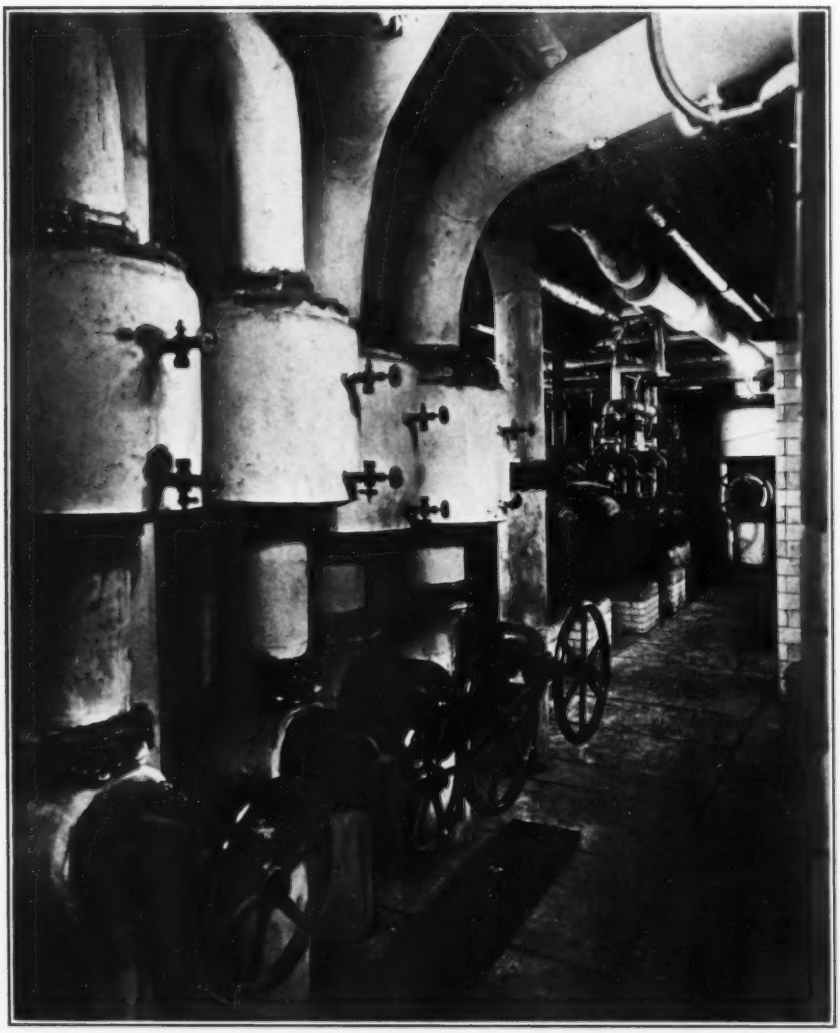
III.

A great modern American hotel is, among other things, probably the most complicated piece of mechanism which the invention and ingenuity of men have ever been called upon to devise. The only other modern mechanical contrivances which might be in the same class are a contemporary battleship and ocean-liner; and in some respects the requirements of a hotel are more numerous and various than those even of a steamship of the highest class. Both of these peculiarly modern achievements must, as Mr. Trowbridge points out, supply from its own premises and at the shortest



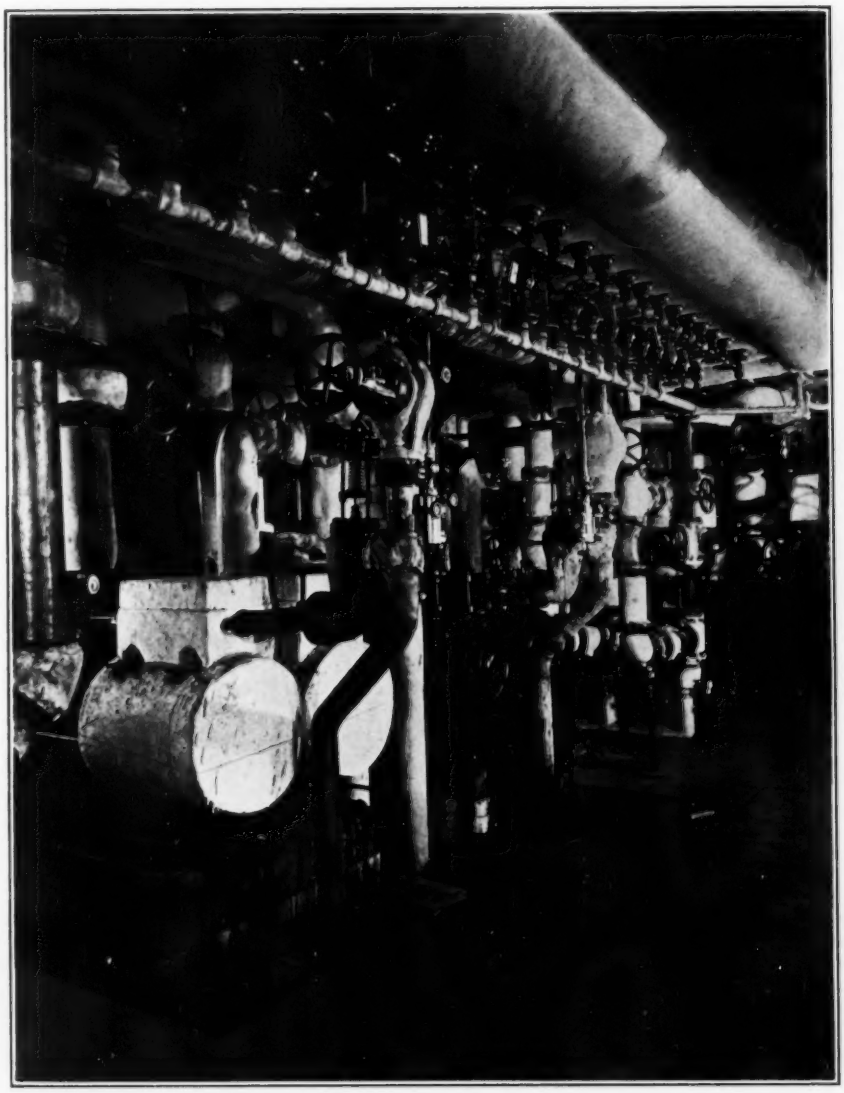
THE HOTEL ST. REGIS—THE PUMPS AND THE DYNAMOS.

New York City. Trowbridge & Livingston, Architects.



THE HOTEL ST. REGIS.
(Machine Room.)

New York City. Trowbridge & Livingston, Architects.



THE HOTEL ST. REGIS.
(Machine Room.)

New York City. Trowbridge & Livingston, Architects.

possible notice every demand of modern life; but a hotel, unlike a steamer, which can be laid up when it is out of date, is, when it is eighteen stories high, a permanent structure, which must be planned not only to meet present needs, but with a view to unforeseen emergencies. Furthermore, a hotel, although it is not subjected to the wear and tear of a constant strain upon its vital parts, has to be arranged for a much more elaborate mechanism of heating, plumbing and elevator service than does an ocean steamship. The bowels and frame of such a building are in truth comparable only to the human body in the complexity and interdependence of the processes that go on within them.

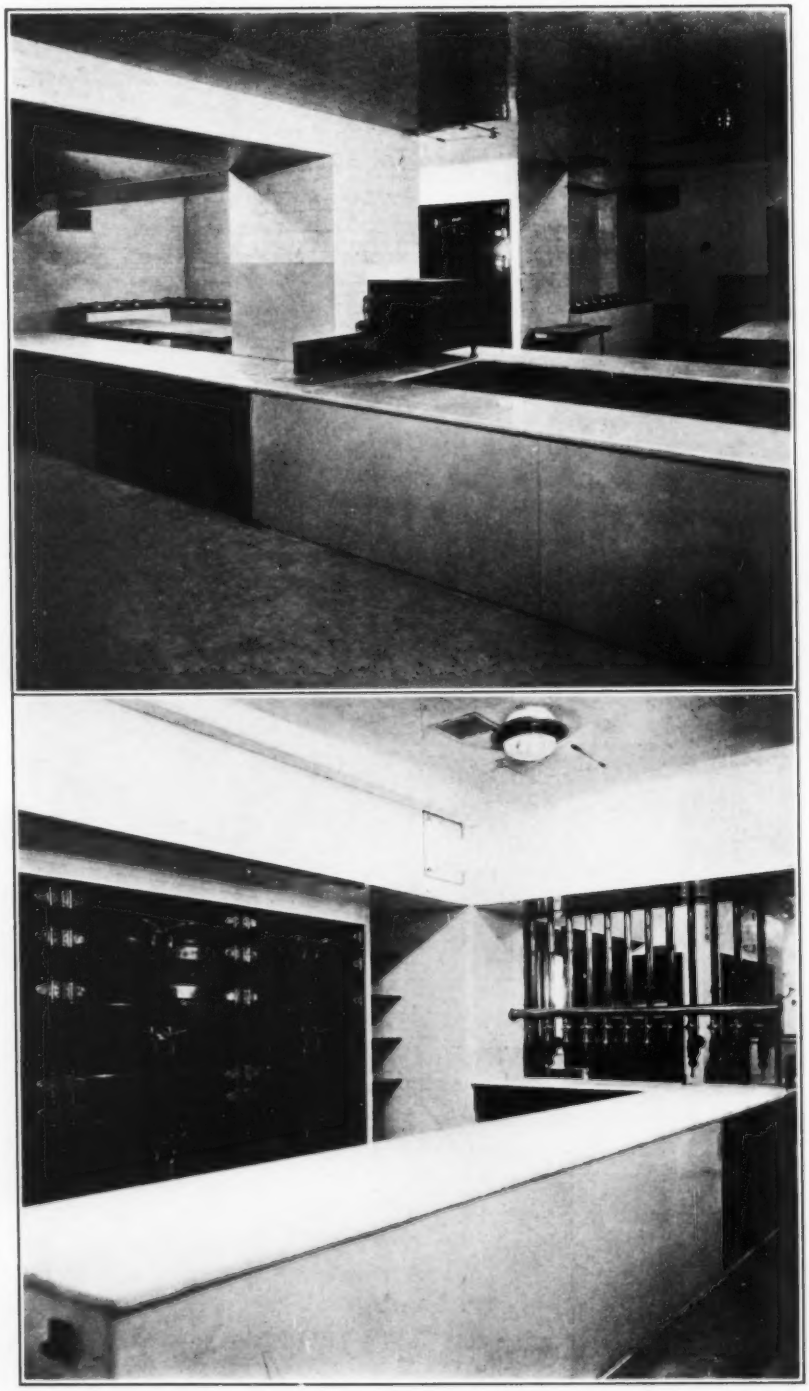
In every "sky-scraper" a large amount of space must be devoted to the "power" equipment—to the boilers, engines, dynamos and pumps necessary to heat, light, and ventilate the rooms, to run the elevators, and to operate the plumbing system; but in the case of a hotel this mechanical equipment is very much more complex, and its requirements are very much more exacting. More power, for instance, is needed at night than during the day-time, the plumbing equipment has to be arranged on a far more elaborate scale, as may be seen from the fact that when the house is full, an enormous hot water supply is necessary to feed the several hundred bath-tubs between 8 and 9 o'clock in the morning. Furthermore, in addition to the services above mentioned, a hotel must find place in its basements for large and convenient kitchens, for the storage of great stocks of food and wine, for ice-making and laundry machinery, for the pneumatic tube, telephone and bell services, for the servants' dining and toilet rooms, and for a number of additional mechanical contrivances, such as the water filters, the rubbish crematory, and the machine for charging water with gas. The difficulty of providing house-room for all of this necessary equipment was increased in the St. Regis by the fact that, although the building was eighteen stories high, the superficial area of its site was not much more than 12,000 square feet. In order to obtain the necessary space, the excavation had to be made exceptionally deep, and three stories were placed underground. Even then, as may be seen from the photographs, the network of pipes in the engine-room is utterly bewildering to a visitor, and would be so even to the engineer of the building were not the apparatus carefully mapped and numbered. In looking at this maze of pipes, however, its analogy to the intestinal convolutions in the human body is forcibly suggested.

The excellence of this mechanical outfit is perhaps illustrated best by the arrangements which have been made for heating the St. Regis, an account of which has already been published by Mr. Trowbridge in the paper mentioned above. The

usual method of heating all "sky-scrapers" has been that of direct radiation from coils of pipes, conveniently placed in the rooms and corridors, and connected with the boilers in the basement, which supply a constant circulation of steam at low pressure throughout the entire system. This method has the merits of being simple, economical, easy to install, and easy to handle; but it also has certain disadvantages, which tell more against its use in a hotel than in an office building. The coils are frequently noisy and always ugly; the amount of heat supplied cannot be

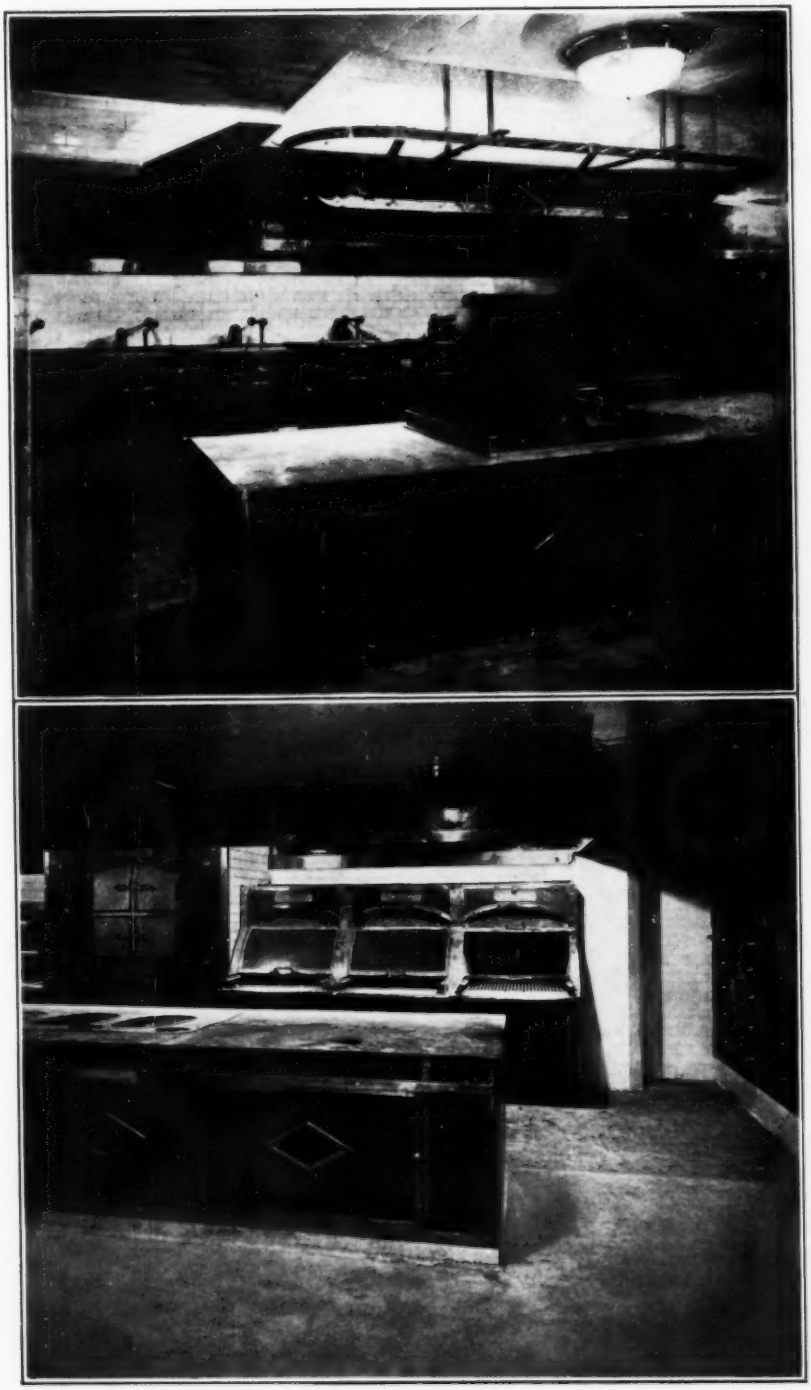
THE HOTEL ST. REGIS.
(The Kitchen.)
New York City. Trowbridge & Livingston, Architects.

flexibly and accurately regulated; and, what is even more serious, it does not include any provision for ventilation. The foul air generated in a steam-heated room can be exhausted only by opening a door or a window. In the Hotel St. Regis these objections were overcome by installing a system of indirect radiation combined with forced ventilation, which will give the rooms of this building a regular supply of pure, fresh air warmed to any degree which may be desired. This system has already been used in private houses, but when applied to sky-scrapers it was considered to be too costly in floor space. Such a loss was, in the present



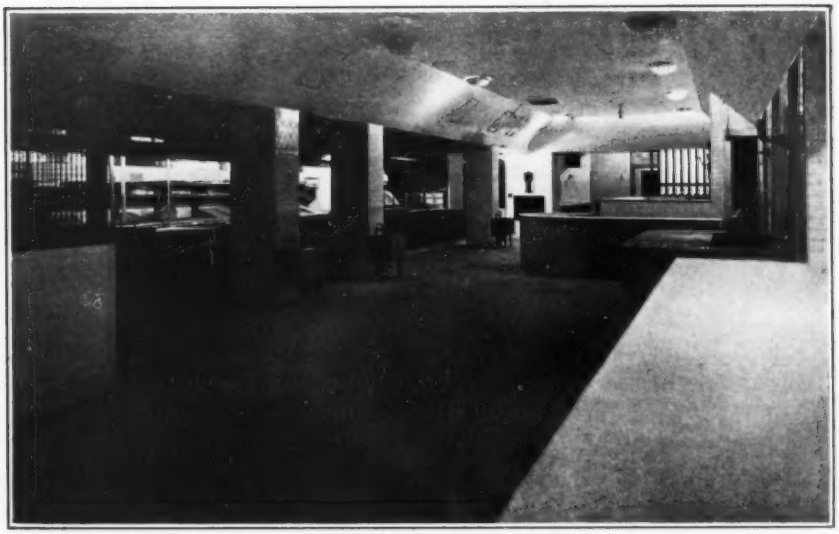
THE HOTEL ST. REGIS—THE KITCHEN.

New York City. Trowbridge & Livingston, Architects.



THE HOTEL ST. REGIS—THE KITCHEN.

New York City. Trowbridge & Livingston, Architects.



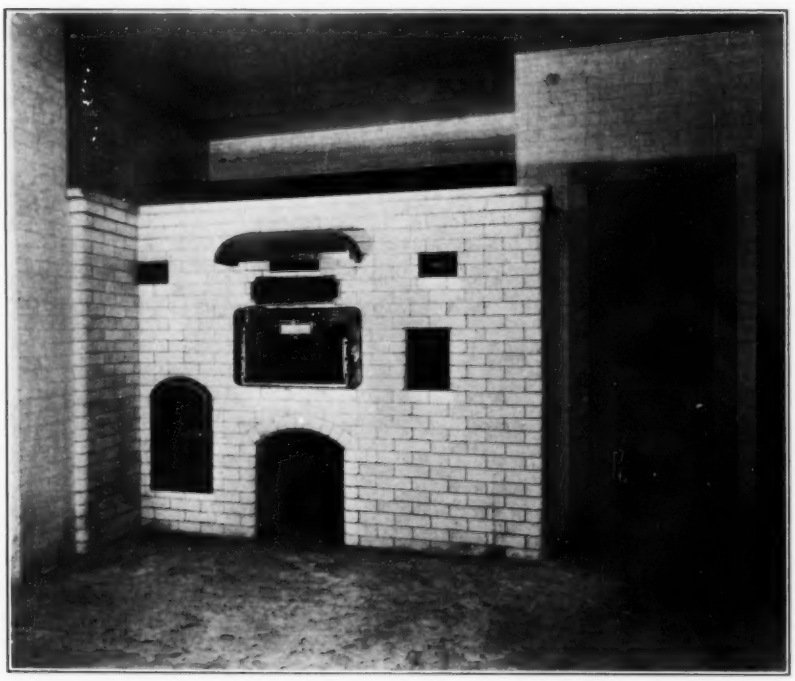
THE HOTEL ST. REGIS.
(General View of the Kitchen.)
New York City. Trowbridge & Livingston, Architects.

instance, reduced to a minimum, because the fresh air, instead of being taken in at the basement and then conducted to all the floors, as in a private house, is drawn into the building at intervals in the height and at those parts of the floors which are of least value. Every four or five stories chambers have been provided wherein the cold air enters, is filtered, warmed by passing over steam coils, moistened, and then forced by blowers operated by electric motors through ducts to the various rooms. The space necessary for these ducts has been readily obtained by utilizing the room above the ceilings in the corridors, provided by the fact that the corridors are not necessarily as high as the rooms. An equally efficient mechanism for exhausting the foul air is obtained by gathering the chimney flues together at the top of the building, and by creating vacuums at these points by means of large exhaust fans. In order to regulate the temperature, an automatic thermostat is placed in every room, corridor and bathroom, and this regulator, after being set at the degree of warmth desired, operates by electric contrivances the dampers and valves necessary to introduce more or less warmed air.

Another comparatively novel mechanical device used in the hotel is the pneumatic sweeping apparatus. It consists of a system of pipes, having a branch in every room connected with vacuum pumps in the basement. In order to operate it, the ser-

vant, instead of sweeping the floor with a broom, and raising assiduously as much dust as she removes, merely attaches a small flexible pipe to the outlet, turns on the valve, applies the nozzle to the dusty surface, and the rubbish is sucked off to the basement. There it is discharged into large sacks, which are taken from the building with other refuse.

Another respect in which the Hotel St. Regis sets a new standard of excellence is in the care which has been taken to protect its structure and contents against fire. Of course, as an eighteen-story building, its owners were obliged to adopt the highest standard of fireproofing demanded by the Building Code of New York, including the use of metal sashes and window frames and fireproofed wood; but they have done more in this respect than they were legally required to do. Not only was an extra effort made to obtain an extremely good quality of fireproofed wood, but it was used for purposes such as picture mouldings, which are not usually considered important enough to be dignified by this care. It was even proposed to make the furniture of the same quality of material; but this idea was finally abandoned. The amount of

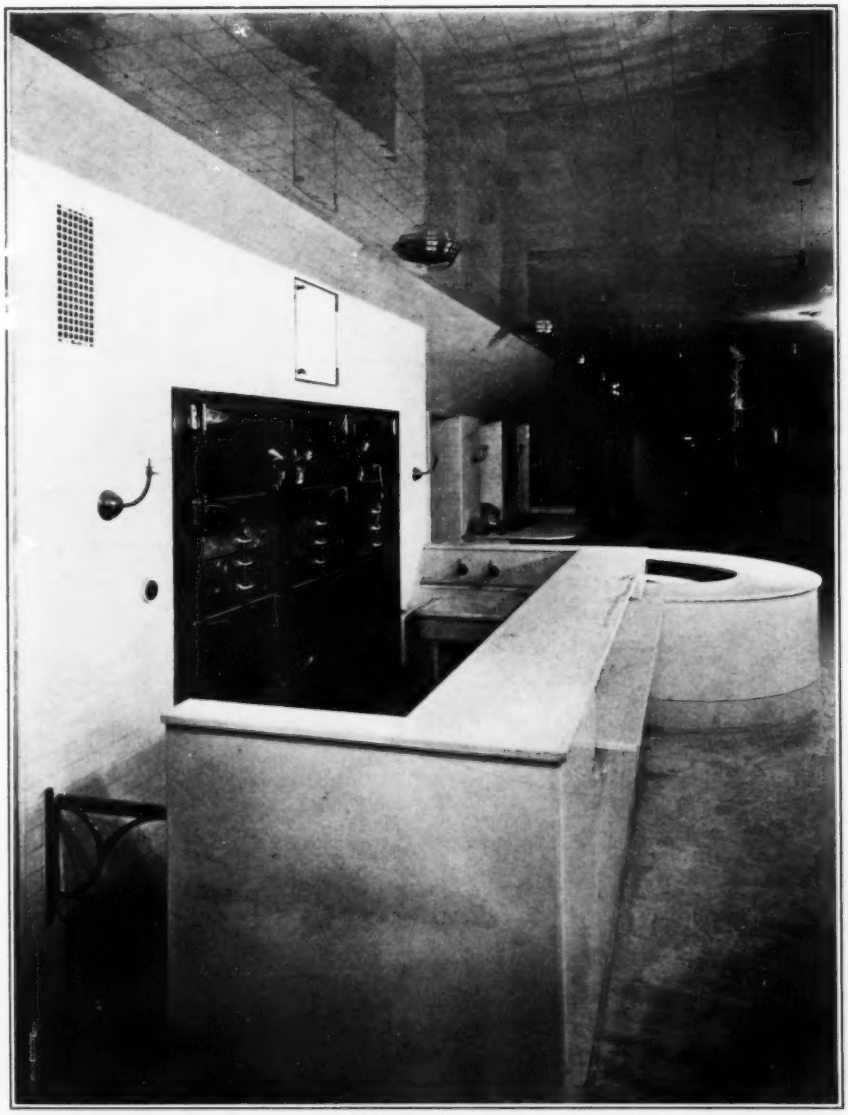


THE HOTEL ST. REGIS.
(The Oven.)
New York City. Trowbridge & Livingston, Architects.

wood, however, used in the finish is comparatively small, other materials, such as marble, bronze and tile being very generally employed. The corridors and main stairs on every floor are lined with marble from the floor to the ceiling. The door trims in all the corridors, halls and bath-rooms are of the same material. The floors, when exposed to view, are either of marble or of tile, the only exception being several special suites of apartments on the second and third floors. The bedroom floors, where covered by carpets, are of cement. The bath-rooms, elevator shafts, service stairways, service pantries and the like are wainscoted with white tile, while the elevator doors, stair balustrades and grilles are of bronze.

Notwithstanding the elaborate precautions taken to make the building fireproof, the safeguards which have been provided against any local fire originating in any room of the house are correspondingly careful and elaborate. The fire-alarms, which are conveniently and conspicuously placed in the halls, ring up, not only the general office of the hotel, but the office of the chief engineer, and that official can deal with the emergency according to his judgment of its seriousness. If need be, he can alarm the whole house, or he can ring up a single floor, or he can isolate the disturbance. Furthermore, his staff will, at stated intervals, go through a regular fire-drill, each man having his appointed place and his definite duties. The truth is, that the chief engineer of a hotel such as the St. Regis has as important and as responsible a position as the chief engineer of a great steamship, and a correspondingly good grade of engineering ability and experience is needed. In proportion as the machinery becomes elaborate and complicated, just in that proportion does the controller of the machinery become an extremely important agent in the successful operation of the hotel. The chief engineer of the St. Regis, for instance, Mr. Jurgensen, has under him a staff of 36 men, all carefully selected with a view to the duties which they are called upon to perform; and very complete arrangements have to be made for the health and comfort of these men, such, for instance, as the provision of abundant bathing facilities in the sub-basement near the machine-shop.

As to the increased responsibilities which are placed upon the chief engineer through the greater elaboration of the machinery, two illustrations must suffice. In addition, of course, to the supervision of the smooth, ordinary operation and extraordinary repairs of the whole mechanical system, a method of heating and ventilating, such as that installed in the St. Regis, whereby the air is heated and moistened or dried, according to the character of the weather, obviously requires much more attention than the ordi-



THE HOTEL ST. REGIS.
(Service Counters in Kitchen.)
New York City. Trowbridge & Livingston, Architects.

nary steam radiator system, as may be inferred from the fact that on one occasion during the past winter the machinery had to be rearranged to suit different conditions seven times in forty-eight hours. Again, each room in the St. Regis will contain as a part of its equipment an electric clock. This device for the convenience of hotel guests has been tried before, but the attractiveness of the device was somewhat marred by the fact that the local clocks have not kept very good time. In the present case, however, careful arrangements have been made to regulate these time-pieces from the chief engineer's office, in which the master-clock

THE HOTEL ST. REGIS.
(Pantry Off the Banqueting Hall.)
New York City. Trowbridge & Livingston, Architects.

is situated. Correct time will be furnished from the Western Union every day, and it will be possible by daily regulation to keep the clocks in the rooms approximately correct.

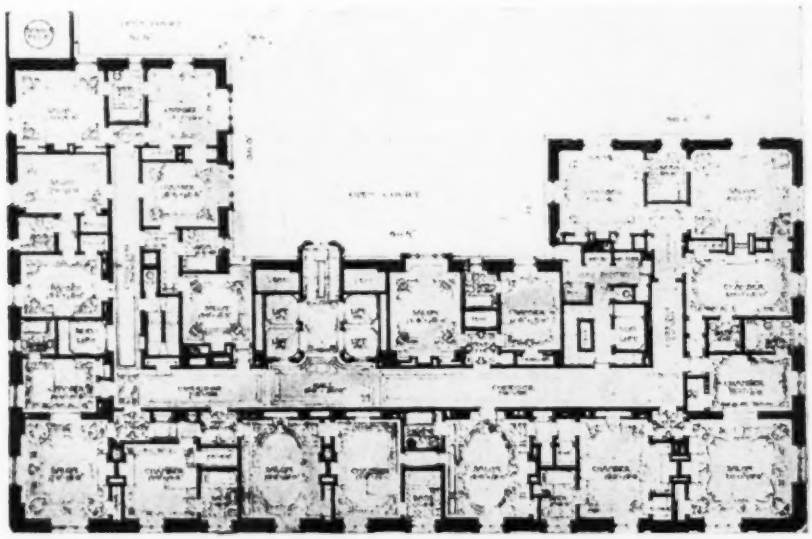
This very imperfect account of the mechanical equipment of the St. Regis must suffice. No one but an expert engineer can really understand how much ingenious planning and what a vast amount of experience is required in order to make the operation of this great machine smooth and economical, and nothing but a complete set of plans could make the details of the engineering dispositions really intelligible. These few remarks, however, assisted by the illustrations, will, however, afford some idea of the difficult prob-

lems which confront the designer of a modern hotel, and the intricate mechanism required to meet them, while it should also indicate that neither money nor effort has been spared to make the St. Regis as complete mechanically as it is in other respects.

IV.

The Plan.

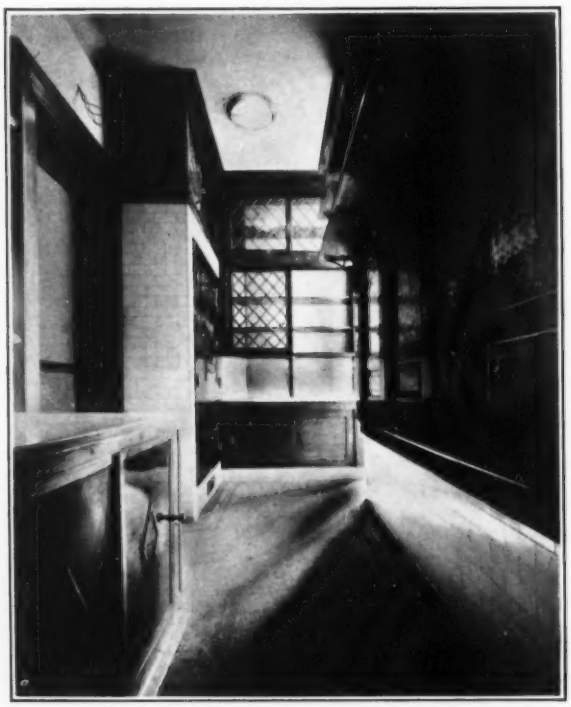
In the competition which preceded the selection of Messrs. Trowbridge & Livingston, as the architects of the St. Regis, these gentlemen succeeded because of the ingenuity and flexibility



THE HOTEL ST. REGIS.
(Typical Floor Plan.)
New York City. Trowbridge & Livingston, Architects.

of the plan furnished by them. At that time it was proposed to erect an apartment house rather than a hotel, or at least an apartment hotel in which much of the rentable space was divided into comparatively large suites, and the plan of Trowbridge & Livingston was well thought out for this purpose, while at the same time allowing, if necessary, for a reduction in the size of the apartments. As a matter of fact, the apartment house idea was subsequently abandoned entirely, the private halls changed into hotel corridors, and the large suites of rooms transformed into sets of one, two or three rooms, with a bath. The plan, reproduced herewith, shows a typical floor plan of the existing hotel.

It will be noticed that this floor plan provides every room in the hotel with good air and light, and every room but three on each floor with an outside or street view. Only three rooms face upon the court, which, being 60 feet wide, affords abundant light, but which, of course, restricts the outlook. The other rooms open at present on a clear view of house-top and street. The rooms on



THE HOTEL ST. REGIS.
(Typical Service Pantry.)
New York City. Trowbridge & Livingston, Architects.

the three street corners are naturally larger than the others, measuring about 17 by 20 feet, but all of the rooms are, according to New York standards, of fair size. Bath-rooms and abundant closet room go with every suite. Each floor contains a service pantry, equipped with dumb-waiters and everything necessary to keep the food hot and savory during its service. The arrangements have all been made on the supposition that the St. Regis will appeal to a comparatively permanent set of residents, who will frequently want meals served in their rooms.

The public or semi-public rooms of the hotel comprise the fol-

lowing apartments. On the ground floor the whole 5th Ave. frontage and a part of the frontage on the street is given up to the general dining-room and restaurant. The dining-room connects directly with the palm-room (so-called), which occupies the middle part of the southern portion of the hotel, and which is lighted from above. The palm-room again leads directly to the café, which

THE HOTEL ST. REGIS.
(An Elevator Hallway and Entrance.)
New York City. Trowbridge & Livingston, Architects.

occupies the south-east corner of the ground floor, while on the northeast corner is a comparatively small ladies' waiting or reception room. These four rooms, together with the entrance hall and the office, occupy the whole of the ground floor.

On the second floor, the Fifth Ave. frontage is given up to the banqueting hall and ball-room, while connecting with it there is a suite of apartments running along almost the entire street frontage, which will be used for reception rooms, a library and other similar purposes. At the southeast corner of the same floor there is a private dining-room suite, consisting of three rooms. The

only other suite in the house which deserves special mention is the one on the 5th Ave. frontage of the third floor. These are the state apartments, consisting of two bedrooms, a bath-room, a dining-room, sitting-room, library and reception room.

V.

The Decorations and the Finish.

The statement was made at the outset that by a happy combination of circumstances all the people who played an important part in building the Hotel St. Regis were united in the attempt to

THE HOTEL ST. REGIS.
(Barber Shop.)
New York City. Trowbridge & Livingston, Architects.

produce a thoroughly excellent result, and the fact that the result establishes a new standard of hotel design and decoration in this city should be credited to the lessee and to the contractors as well as to the owners and the architects. Mr. R. M. Haan, the proprietor of the new hotel, was fortunately of the opinion that the use of the most permanent materials in finishing a hotel was good economy. The lessee is compensated for the increased rent by being relieved of the heavy expenses ordinarily incurred for repairs and renewals. The consequence of the conscientious carrying out of this view of hotel economy in the St. Regis is that

no building has ever been erected in this country, whether hotel or residence, which presents a more substantial interior finish, and it makes no difference in this particular respect whether the room selected for the best be a servant's pantry or a banquetting hall. The finish of the latter would be more sumptuous, but it would not be any more substantial and serviceable.

This matter has been already touched upon in referring to the care which had been taken to use materials as far as possible fireproof, but it deserves even more emphasis from the present point of view. The hall walls of every floor are lined with carefully selected marble, the floors are paved either with marble or tile,

THE HOTEL ST. REGIS.
(Bath-Room, State Suite of Apartments.)
New York City. Trowbridge & Livingston, Architects.

the servants' stairways and the pantries are finished with white tiles—in fact, practically all the service portions of the house are finished in this manner, of which a number of good examples can be seen in the illustrations to this article. The barber shop, for instance, is a very novel and interesting example of the clean and gay effect which can be obtained from the use in such a room of white tiles, panelled with colored ones. Again, the kitchen, besides being a well-arranged and spacious apartment, is finished so that the great wear and tear to which such a room is subjected will be spent upon the toughest and hardest materials. The

floor is marble, the walls are tiled, the counters are made of glass. There is nothing perishable and nothing which is hard to keep clean. The excellence of the arrangements of the kitchen can only be appreciated by those who understand the complex process necessary to cook and serve all sorts of food in almost all parts of

THE HOTEL ST. REGIS.
(Hallway—Second Floor.)
New York City. Trowbridge & Livingston, Architects.

an eighteen-story building, and the same time to check properly the different parts of this process. Here it is only necessary to state that the refrigerator storage space is abundant, the ranges are of the very best make and equipment; special places have been apportioned for every phase of the work of preparing and storing an enormous food supply, and the ventilating apparatus is particularly elaborate and complete. None of these details has been decided without full consultation with Mr. Haan's "chef" and other assistants, and it is his expectation that these arrangements will permit to conduct economically and smoothly a kitchen and restaurant which will satisfy the most exacting demands and the most fastidious taste.

The bedrooms are finished, so far as possible, just as substantially as the other apartments. The floors are of cement. The mantelpieces in the more important rooms of marble, and the woodwork almost exclusively of hard-woods. One thing which the lessee, Mr. Haan, wished particularly to avoid was the expense in-

THE HOTEL ST. REGIS.
(Entrance to Stairway, First Floor.)
New York City. Trowbridge & Livingston, Architects.

separable from the maintenance of a great deal of paint in the rooms, with the consequence that the doors, base-boards and the like in many rooms are made of white mahogany. At least one corner room on each floor has been painted a dull greyish white, but, as may be inferred from the illustrations, the amount of paint employed is probably smaller than in any building of its size in the world. The bath-rooms are tiled, and contain porcelain tubs, open plumbing and a separate thermostat, the only exception being the bath-room in the state apartment suite, which is finished throughout in marble.

These examples will give a sufficient idea of the substantial character of the finish, and it only remains to speak of this finish

from the point of view of design and effect. Since a modern hotel cannot succeed without being attractive and festive in appearance, as well as safe, comfortable and substantial, the owners, the architects, and the lessees have, of course, bestowed as much attention upon the appearance of the hotel as upon its structure, plan and equipment. Moreover, the point of view from which the problem of interior design has been approached testifies both to good taste and good sense. They have purposely avoided the besetting sin and temptation of the great majority of people who have been responsible for the decoration of modern American hotels—the sin of decorative excess. Of course the public rooms of a hotel are necessarily showy and to a certain extent sumptuous apartments. The scale of the decorations may with perfect propriety be heightened to a point which would be offensive under other surroundings, and the designers of the St. Regis have not made the mistake, which would be bad architecture as well as bad business, of subduing the detail to the modest and reticent scale appropriate to a private residence. They have made the public rooms rich, handsome and even "stunning," but in so doing they have not piled on swollen detail and gaudy colors until the whole effect became confused and monstrous and the eye craved the simplicity of bare walls and modest projections. The detail of each room has been kept in its place by a consistently realized general design, and the whole effect, while as gay as is appropriate in rooms used by pleasure-seekers, are not only not adorned to the point of decora-

THE HOTEL ST. REGIS.
(Entrance.)
New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(The Office.)
New York City. Trowbridge & Livingston, Architects.

tive inebriation, but have been, for the most part, treated with comparative sobriety and good taste.

The styles used in decorating the rooms have been, as in almost all American work of this kind, borrowed from one of the several periods of classic European decoration, but there has been no very

THE HOTEL ST. REGIS.
(Corridor Leading to the Main Dining-Room.)
New York City. Trowbridge & Livingston, Architects.

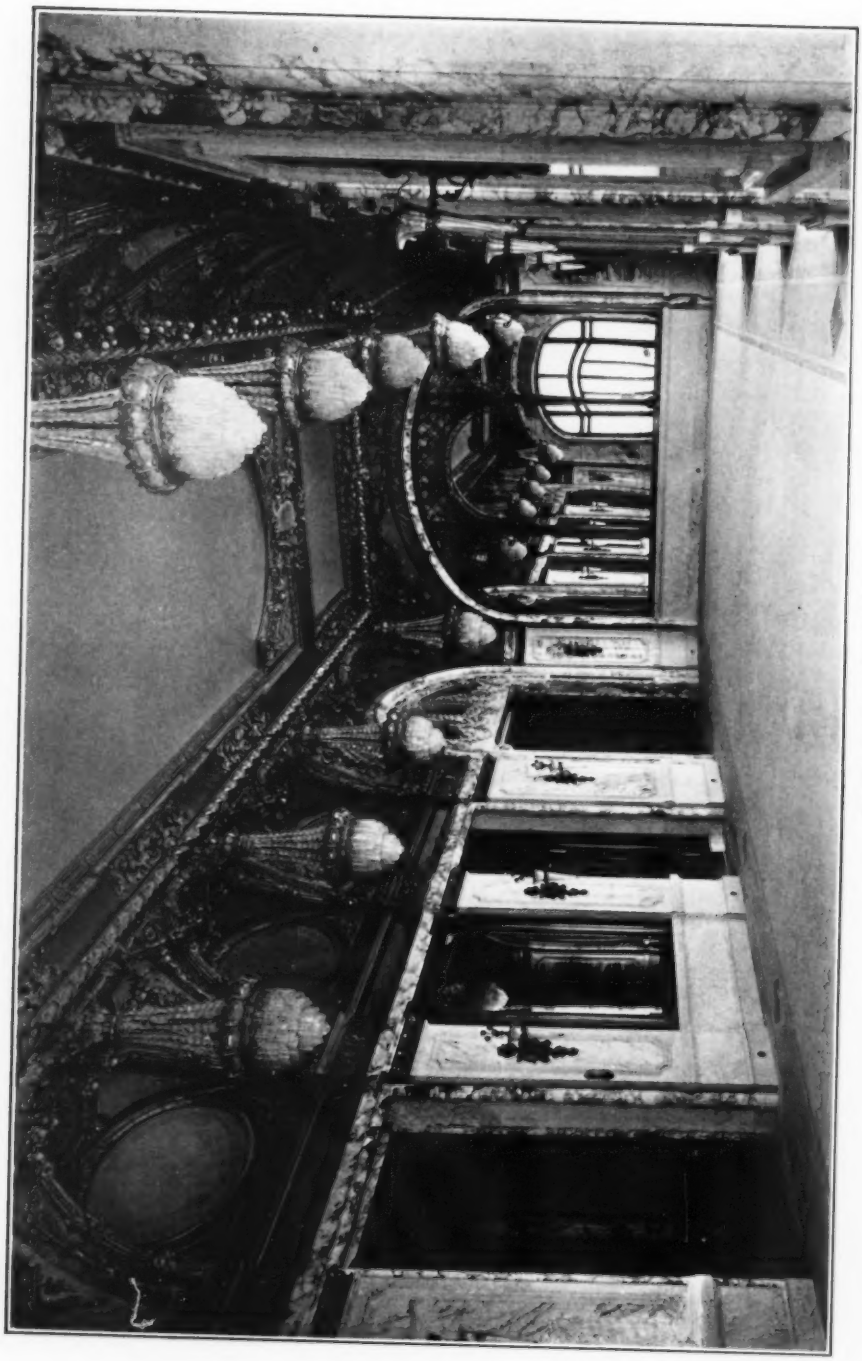
scrupulous adherence to stylistic consistency. It is motives quite as much as forms which have been borrowed. An attempt has been successfully made to give life to these classic forms by nicely adapting the scale of the decorative motives to the space which they fill and to their function in the design, and this detail consequently deserves careful study. Unlike so much detail, particularly in large American buildings, it is not mechanical and lifeless; on the contrary, if it has a fault, it is sometimes too crisp and vivacious, too little subdued to its architectural setting. As a matter of fact, it has all been specially designed and carefully modeled under the incessant supervision of the architect, and credit for the result should be divided both between the designer and the many skilled

workmen, by whose co-operation the designer was enabled to carry out his ideas.

If the Hotel St. Regis shows anything, it shows the great advance which has taken place during the past ten or fifteen years in the ability of the leading contracting firms and their workmen to execute with vivacity and skill the decorative purposes of an architect. In the early years of the architectural revival in this country nothing hampered architects more than the difficulty of securing the assistance of competent artizans; but the long educational effort is now having its effect. No one can look at the admirably executed finish of the St. Regis without realizing that the architects have been skilfully and loyally assisted by the contractors and the expert artizans in their employ. The value of this assistance is shown in pretty much every division of the work; but particular attention should be directed to the modeling of the plaster, stone and metallic detail, to the very workmanlike setting and finish of the marble, both on the walls, floors and chimney-pieces, to the care with which the wood-work has been installed and stained, to the great beauty of the woods chosen, and to the general excellence of the electric fixtures, whether in the main dining-room or the smallest bedroom. On no job in this country has better workmanship been shown and a higher standard of execution been laid down, and we doubt whether this standard will be matched for a year and several days.

The main entrance and the general office have been treated with a sobriety which is very unusual in buildings of this class. There are two swing-doors, one on each side of the office, and each is housed in a handsome bronze canopy. One of these entrances is opposite the door leading into the palm-room, and the other opposite the door leading into the café. It has been the evident intention of the architect to keep this general office businesslike and simple, as well as handsome. The floor is of Irish marble, laid in an elaborate pattern; but it will, of course, be covered with rugs. There is a dado of light brown shaded marble, which stops about three feet from the floor, and above the walls are finished in Caen stone, which, because of its warm and pleasant surface, is one of the few stones, except marble, which can be used for interior finish. The pillars are decorated with bunches of flowers tied together by a ribbon, but the detail, while vigorously modeled, stands out rather too much from the flat surface on which it is carved. Bronze capitals decorate the heads of the column, and the room is lighted chiefly by skylights, filled with dull and well-patterned stained glass.

The entrance to the general dining-room on the Fifth Ave. frontage is on the right, and the hallway is finished in rich-veined



THE HOTEL ST. REGIS.
(The Main Dining-Room.)
Trowbridge & Livingston, Architects.
New York City.

THE HOTEL ST. REGIS.
(The Palm-Room, from the Musicians' Gallery.)

New York City.

Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.

(Detail—Main Dining-Room.)

New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(Detail—Main Dining-Room.)
New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(The Palm-Room.)

New York City. Trowbridge & Livingston, Architects.

white marble, thus constituting a gradual introduction to the greater splendor of the restaurant itself. This room is quite the most sumptuous apartment in the building, but the splendor of the effect is obtained more by the use of rich and striking materials than by mere superfluity of detail. The walls are lined with the same grained marble as the hall, but they are broken so much with windows on the one side and doors on the other that the uprights are treated as pilasters and supports. The south wall carries a large mirror. The ceiling is domed, wrought into an elaborate pattern and gilded. The gilding, which has been lavishly employed, both

THE HOTEL ST. REGIS.
(The Café.)
New York City. Trowbridge & Livingston, Architects.

in this and in other rooms, has been done with skill and discretion by Mr. James Wall Finn, and its use with the marble has served to make the room splendid without any touch of vulgarity. The sheen of the gold has been made sober and deep, yet it has not been made dull and colorless. On the contrary, it has the effect of burnished metal; it still glows, but with a fire that burns slow and long.

Every large contemporary restaurant must have a room, which it is customary to call the palm-room, and which differs from the

THE HOTEL ST. REGIS.
(A Private Dining-Room.)
New York City. Trowbridge & Livingston, Architects.

main restaurant in that smoking is permitted during all hours and in all company. The main dining-room of the St. Regis gives directly upon such a room, which occupies the floor of the court of the hotel, and consequently is lighted from above by stained glass, similar to that in the main hall. The walls are finished with low dado of Istrian marble, and above mirrors on one side and Caen stone on the other. The room derives its character, however, chiefly from the decorations, painted by Mr. Robert Van Vorst Sewell, and distributed around the room in the tympana of the arches. These decorations tell the story of the troubles of Psyche,

THE HOTEL ST. REGIS.
(Detail of the Banqueting Hall.)

New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(Banqueting Hall.)

Trowbridge & Livingston, Architects.

New York City.

THE HOTEL ST. REGIS.
(Reception Room.)

Trowbridge & Livingston, Architects.

New York City.

THE HOTEL ST. REGIS.
(Mantelpiece in Reception Room.)
New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(The Library.)

New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(Small Reception Room.)

New York City. Trowbridge & Livingston, Architects.

THE HOTEL ST. REGIS.
(Library of the State Suite.)
New York City. Trowbridge & Livingston, Architects.

and are excellently toned to harmonize with the color scheme of the room. It is the one palm-room (so-called) in the city, in which an intelligent attempt has been made to reach a general effect, and this effect owing to the more strictly architectural character of the decorative devices possesses dignity as well as gayety.

The café, adjoining the "Psyche" room, is a high, somewhat dark apartment, paneled deep to the ceiling in quartered oak. The wood is extraordinarily fine and rich in quality, and the room is correspondingly handsome. It is a much higher room than the cafés of the important restaurants of New York, and arouses associations of paneled dining-rooms in some of the great residences

of Europe. Like the "Psyche" room, its dominant effect is subdued and dignified rather than festive.

Probably, however, the greatest success reached by Trowbridge & Livingston in their interior designs is the banqueting hall, on the 5th Ave. frontage of the second floor. This room is something more than festive and splendid. It is extremely simple, yet at the same time "stunning"; it is both very gay and highly distinguished.

THE HOTEL ST. REGIS.
(Small Reception Room.)
New York City. Trowbridge & Livingston, Architects.

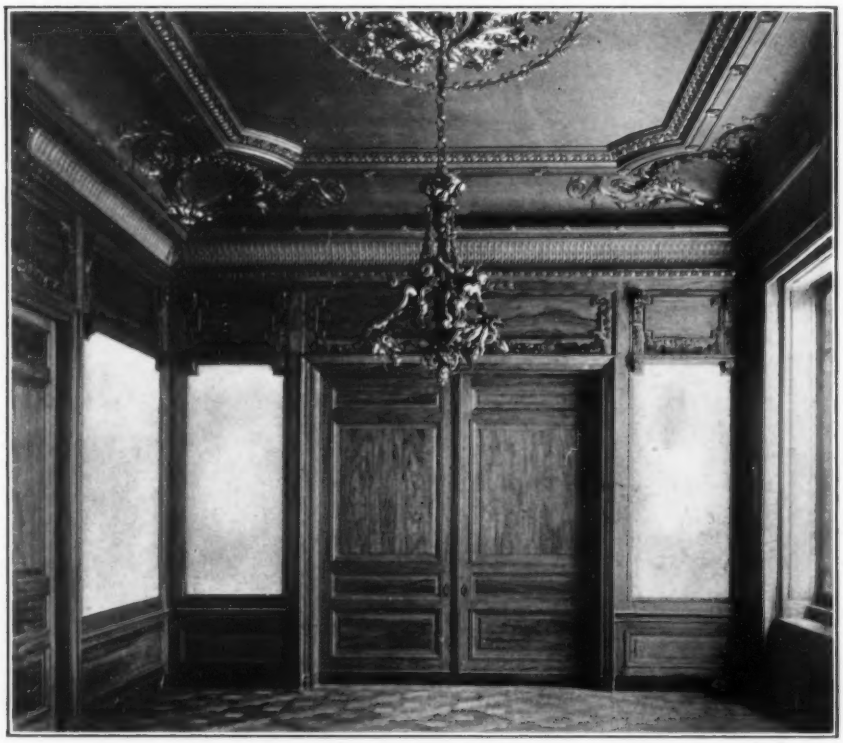
Like the restaurant below, the walls are paneled in marble, the panels being framed by pilasters with bronze capitals; but the whole effect is much simplified by the dull white and consequently flat appearing marble which has been used. This material has all the value of marble, in that it is rich, highly polished, and struc-

tural; but it takes its place more modestly on the wall than do other varieties of marble, and in this respect has something of the value of wood. In fact, the service doors of this room, which are wood painted white, harmonize perfectly with the marble on the wall. The wall spaces not occupied by windows, doors and the marble pilasters are thrown into large marble panels, which will be hung with tapestries. The fabrics used for the hangings will be copied

THE HOTEL ST. REGIS.
(A Corner Sitting-Room.)
New York City. Trowbridge & Livingston, Architects.

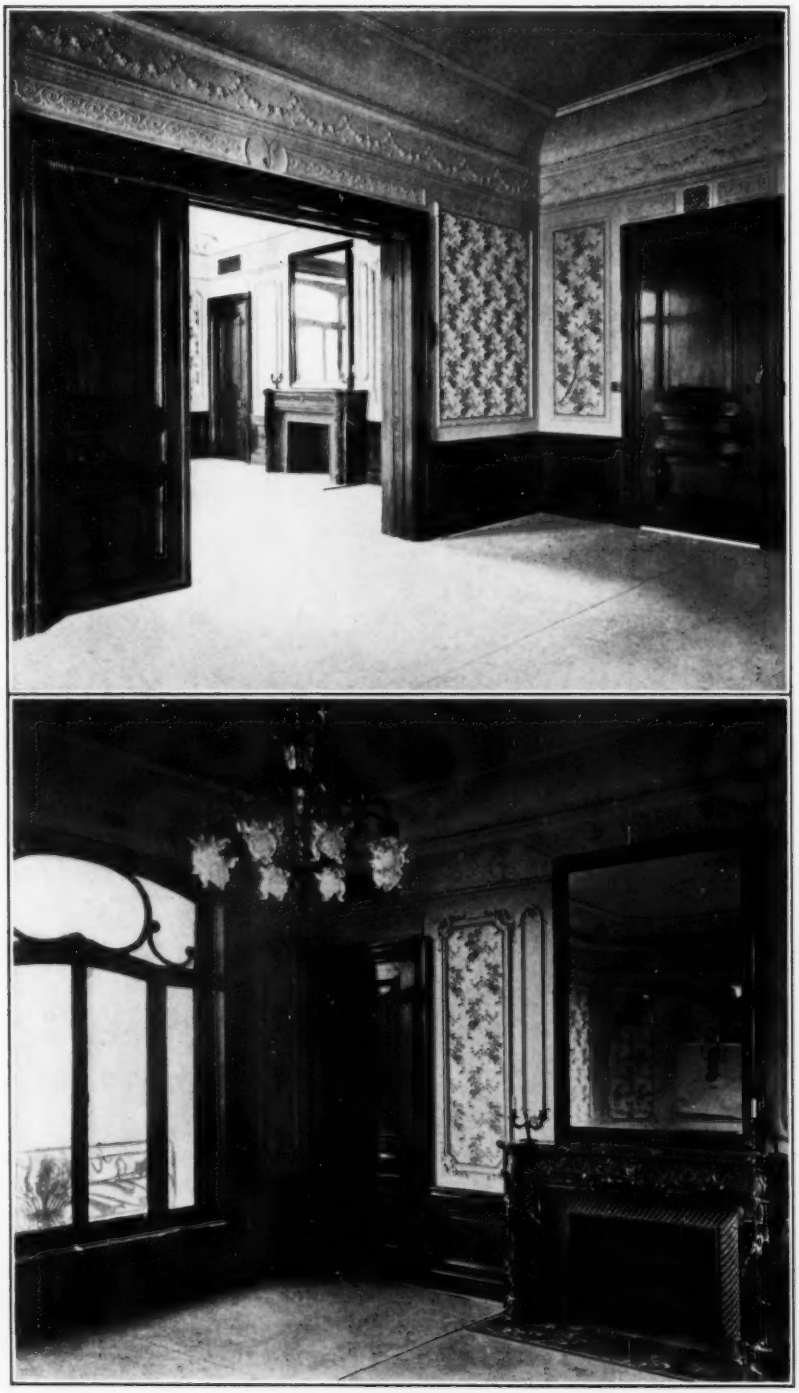
from rich yellow and white Venetian velvet, and the total effect, when the chandeliers are lighted and the prevailing whiteness is relieved by the fabrics on the walls, will be not only brilliant and "stunning," but really beautiful.

The frontage on 55th St. of the second floor leading off from the banqueting hall is occupied by a series of reception and sitting rooms, which will be used either in connection with entertainments given in the banqueting hall or individually, as occasion serves. The room of this series, nearest the frontage on 5th Ave., is a very handsome and original apartment, paneled to the ceiling in Circassian walnut, and with the frames of the panels



THE HOTEL ST. REGIS.
(Small Reception Room.)
New York City. Trowbridge & Livingston, Architects.

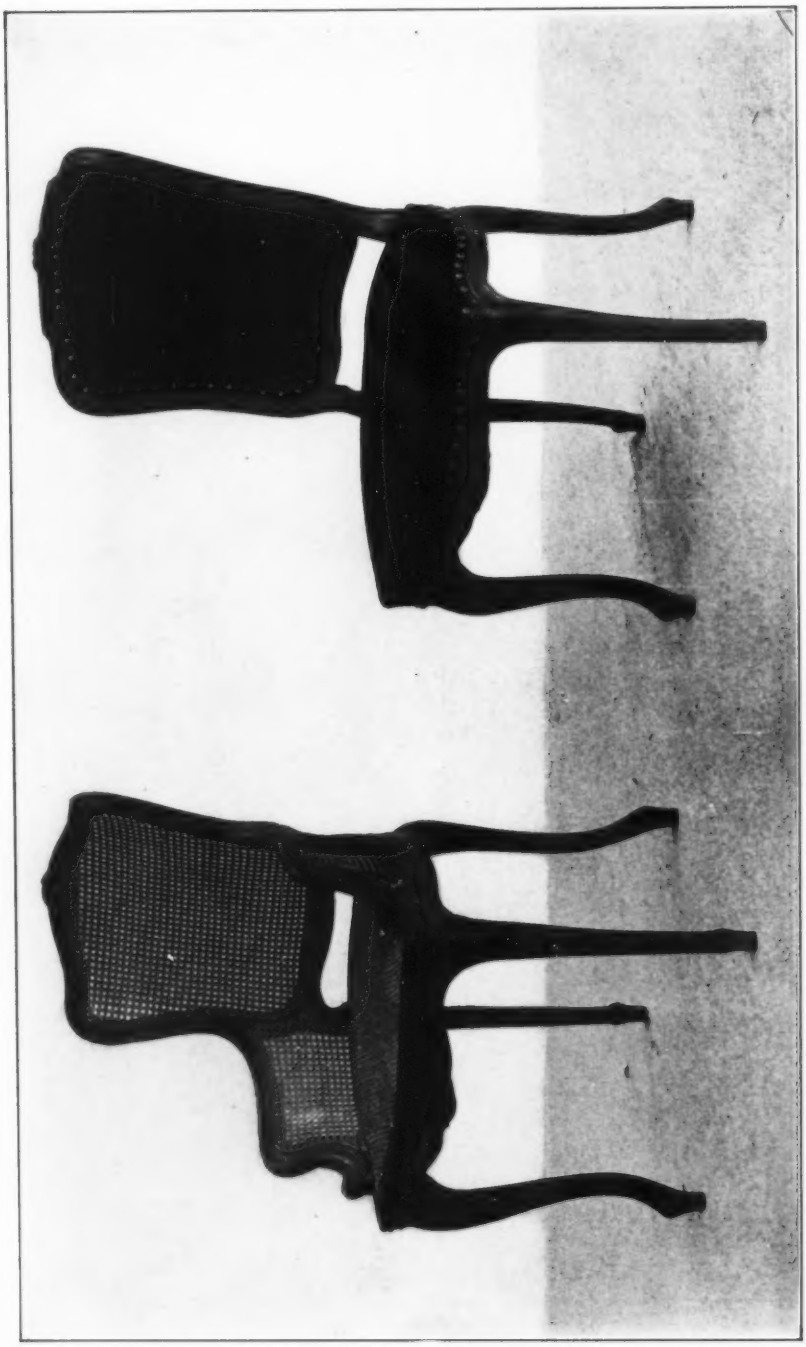
worked into patterns and skilfully gilded. It is scarcely worth while, however, to describe these rooms separately, for the illustrations that go herewith give a very much better idea of them than could be obtained from a detached description. It is sufficient to point out that these rooms have been designed, not as a suite, for the purpose of obtaining some unity of effect, but rather individually with a view as to some special purpose which each of them might be called upon to serve. Another very handsome suite of rooms on this floor is the several corner rooms, which can be



THE HOTEL ST. REGIS.

(Bed-Room and Sitting-Room of Corner Suite.)

New York City. Trowbridge & Livingston, Architects.



THE HOTEL ST. REGIS.
(Typical Chair.)

Trowbridge & Livingston, Architects.

New York City.

used either individually or together as private dining-rooms. One of these apartments is finished in Circassian walnut, with a simple, but very effective, gilded ceiling, while the other two are paneled in white mahogany.

It is almost unnecessary to add that the decoration of the private sitting-rooms and bedrooms has received as careful attention as that of any other part of the house. One of these suites, particularly, occupying the frontage on Fifth Ave. of the third floor, and constituting the state apartments of the hotel, has been finished in the same expensive manner as the series of sitting and waiting rooms on the floor below. As the mantelpieces of the rooms were not in place at the time the building was photographed, it has been impossible to secure good illustrations of this extraordinary suite, which will never be appropriately occupied until Prince Henry or the like is again domiciled for a few nights in New York; but some idea of the character of the rooms may be obtained from the sample given of the wood-work in the library of the suite. The lesser sitting and sleeping rooms are none of them paneled; but what wood-work there is is well designed, particularly the mantelpieces, the panels of the doors, and the mouldings of the door frames. The walls are very frequently covered with fabrics rather than paper, and wherever paper is used its quality is of the very best. Several of the designs are somewhat florid; but I presume that the private rooms of a hotel must make an appearance which will satisfy all kinds of people. Many of the papers used in the Hotel St. Regis are, however, uncommonly good, and what with the hard-wood finish, the simple and well-shaped electric fixtures, the excellent system of heating and ventilation, and the abundant closet room, these apartments can hold their own with the best of that class in the city.

The furniture and hangings have been either specially designed or selected for the places they will occupy. The character of these designs may be gathered from some illustrations which appear elsewhere in this issue. Here it is only necessary to state that Mr. Haan, in ordering this furniture, had the same purpose in mind as the owners and the architects did in constructing and equipping it, the purpose, that is, of equaling or surpassing the standard established by the best private houses in Manhattan. He has not been content, consequently, to use any of the stock furniture and hangings. For the important public rooms he has imported tapestries, hangings, and, in many cases, individual pieces of furniture. And the materials, chairs, and the like, manufactured in this country have been copied from the best models which could be procured. Attention should be particularly directed to the excellence of the ordinary chairs in the public dining-room.

Finally, in considering the St. Regis as a whole, and the general ideal of practice which it stands for in current American architecture, I cannot do better than quote a sentence from the article of Mr. Trowbridge in the "Société des Architectes Diplomés," to which reference has already been made: "It is in all modesty we say," declares Mr. Trowbridge, addressing his French readers, "that it has become necessary to depart from the precedents which have been established for so many generations. It is not a desire for originality which actuates us, but a sincere desire to solve new and complex problems, which are the result of the conditions under which we live, and over which we have no control." It is in the spirit expressed by these words that the St. Regis has been designed. The architects have not tried to be original, which is the last thing which any artist should try to be. They have merely tried to find a satisfactory and praiseworthy solution for the architectural and decorative problem, and by which they were confronted, and in so doing they have departed from established precedents only so far as it was necessary to meet imperative conditions. What they have sought was not novelty or "individuality," but propriety of design, excellence of workmanship, and it is in the light of this standard and purpose that their work should be judged.

Arthur C. David.

THE HOTEL ST. REGIS.
(Sitting-Room.)
New York City. Trowbridge & Livingston, Architects.

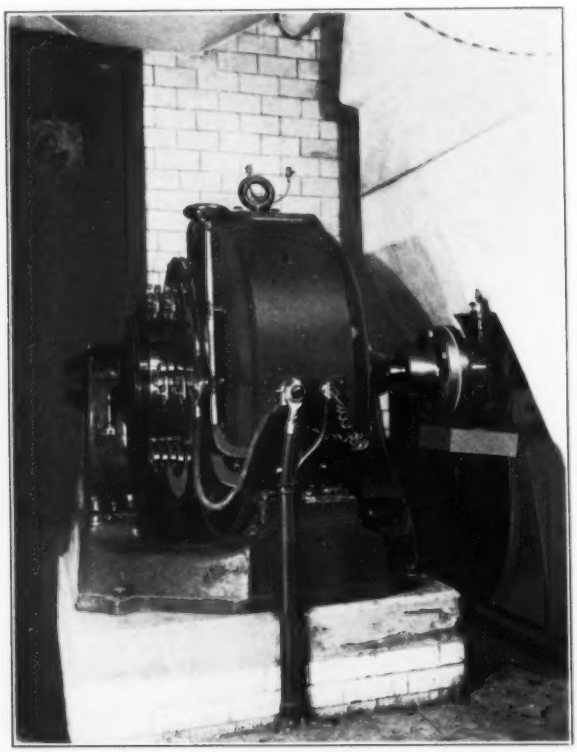
A TRADE REVIEW OF THE WORK ACHIEVED IN THE HOTEL ST. REGIS.

In the general description of the Hotel St. Regis contained in this number of The Architectural Record, attention has been called to the excellent work achieved by the sub-contractors, under the general supervision of Messrs. Marc Eidlitz & Son, and the character of this work and the names of the firms that achieved it

TYPICAL CORRIDOR IN HOTEL ST. REGIS.
(Marble furnished by John H. Shipway & Bro.)

are worth more specific description. The original contractor for the foundations, the steel structure and the masonry was the Thompson-Starrett Company, which completed its part of the job with all the promptitude characteristic of the work of that firm. The structural steel was manufactured by the American Bridge Company, and the paint used to coat the steel-frame in order to preserve it from corrosion was Dixon's silica graphite

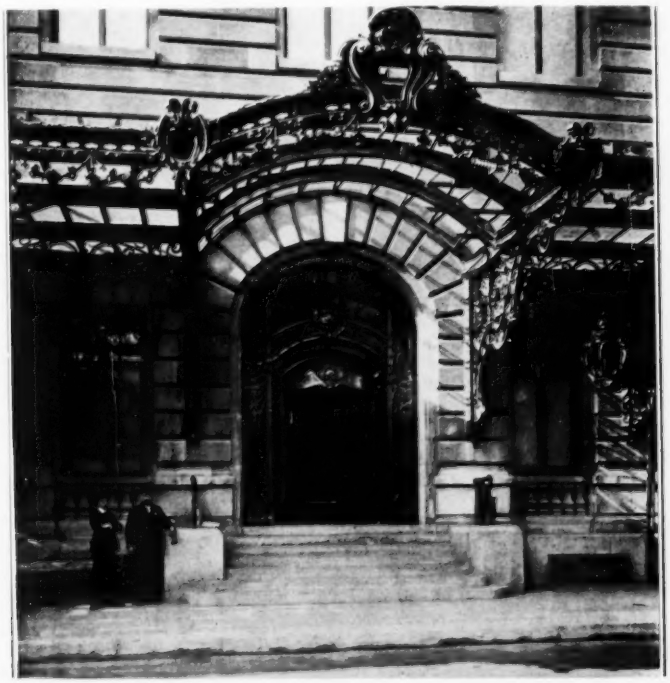
paint, manufactured by the Joseph Dixon Crucible Company, of Jersey City. The handsome stone, to which the building owes so much of its architectural effect, was furnished by James Gillies & Sons, the lower stories being of granite and the upper stories of a carefully selected and warmly colored blue-gray Indiana limestone, while the works of the Sayre & Fisher Co. manufactured the brick. The system of fire-proofing used, as in the case of so many other important buildings in the city, was that of the Roebling Construction Company. A score or more of firms participated in



C & C ELECTRIC MOTOR INSTALLED IN HOTEL ST. REGIS.

the work of completing the mechanical equipment of the building; but special mention should be made of the C & C electric motors, which play an important part in running the ventilating and other apparatus of the building; the Loomis-Manning filter, which has become a necessary adjunct to the sanitary outfit of great residential buildings; the Ellis automatic ejector system, which is so frequently used for the removal of sewage and other liquid waste, when the fixtures are set below

the sewage level; the Watkins Laundry Machinery Co., of Cincinnati, which manufactured and installed the elaborate machinery necessary to wash the enormous quantities of linen used in such a hotel; and the rolling steel shutters, so desirable for fire protec-



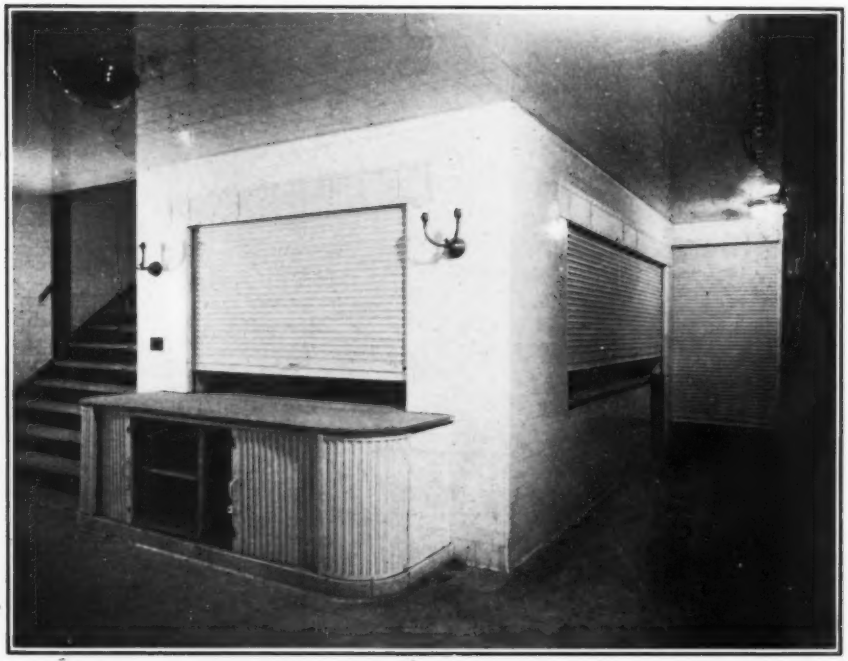
ENTRANCE TO HOTEL ST. REGIS.
(Showing the revolving door furnished by the Van Kannel Revolving Door Co.)

tion, manufactured by the Kinnear Mfg. Company, and sold in this city by the William H. Brodie Company.

Since the lessee of the hotel proposes to have the best restaurant in New York, he has naturally been very careful about his kitchen equipment. Not only are the floors of the kitchen of marble and the walls of tile, supplied and installed by William H. Jackson Co., but the firm responsible for the ovens, ranges, kettles and the rest of the cooking apparatus, Messrs. Duparquet, Huot & Moneuse, state that it is the most complete plant of the kind which they have ever installed. The counters of glass in the main kitchen and in the several serving rooms are not only the "latest thing" in modern improvements, but for cleanliness, sightliness, durability and general serviceableness, are a great advance over tables of other materials. The glass for these counters is known as the "Novus" glass, manufactured by the Penn-

American Plate Glass Co. As for the refrigerators, they are both very numerous and very well equipped; and the Jewett Refrigerator Company, which supplied them and put them in, testify to the excellence of the outfit. The plumbing fixtures, which are of the highest grade used, were supplied by the J. L. Mott Iron Works, which is a sufficient guarantee of their quality.

Since the woodwork in the Hotel St. Regis was, for the most part, to be finished rather than painted, it was of the utmost importance that the natural grain of the wood should be good, and that nothing should be done to spoil this grain in working it. Conse-

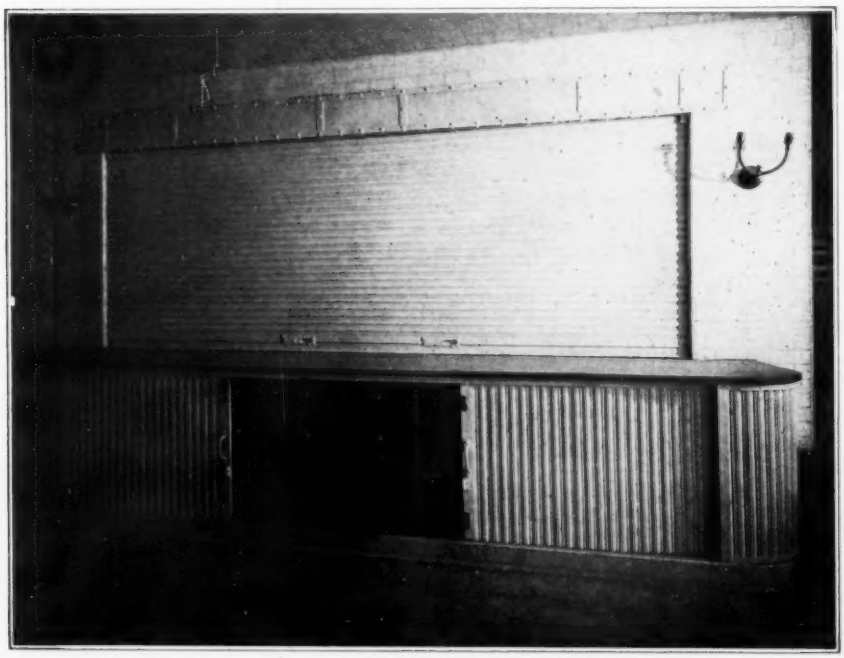


KINNEAR MFG. CO.'S VERTICAL AND HORIZONTAL STEEL-ROLLING SHUTTERS IN HOTEL ST. REGIS.
(William H. Brodie & Co., New York, Agents.)

quently, the utmost care was used in selecting the actual boards used from the stock of Messrs. I. T. Williams & Sons, who supplied the material, and every precaution was taken against the subsequent discoloration of the lumber during the process of fireproofing. After an investigation of the various methods of fireproofing the architects and builders decided that the work would be done best by the Fireproofine Manufacturing Company. The fact that the delicate mahoganies, beautiful walnuts and oaks and other

fancy woods used in this magnificent hotel have been so well treated that it is impossible to tell that the material has been through any process at all, is one of the best evidences that the process of the Fireproofine Manufacturing Company is what they claim for it—a process that will not discolor in the slightest degree the most expensive and delicate woods. In relation to this woodwork it is also interesting to note that the standing trim on sixteen floors was furnished by W. & J. Sloane.

As will be seen from the illustrations, the Hotel St. Regis contains an unusual number of rooms, wholly or partly finished in marble. Among the apartments so finished are the main office,



KINNEAR MFG. CO.'S VERTICAL AND HORIZONTAL STEEL-ROLLING SHUTTERS IN HOTEL ST. REGIS.
(William H. Brodie & Co., New York, Agents.)

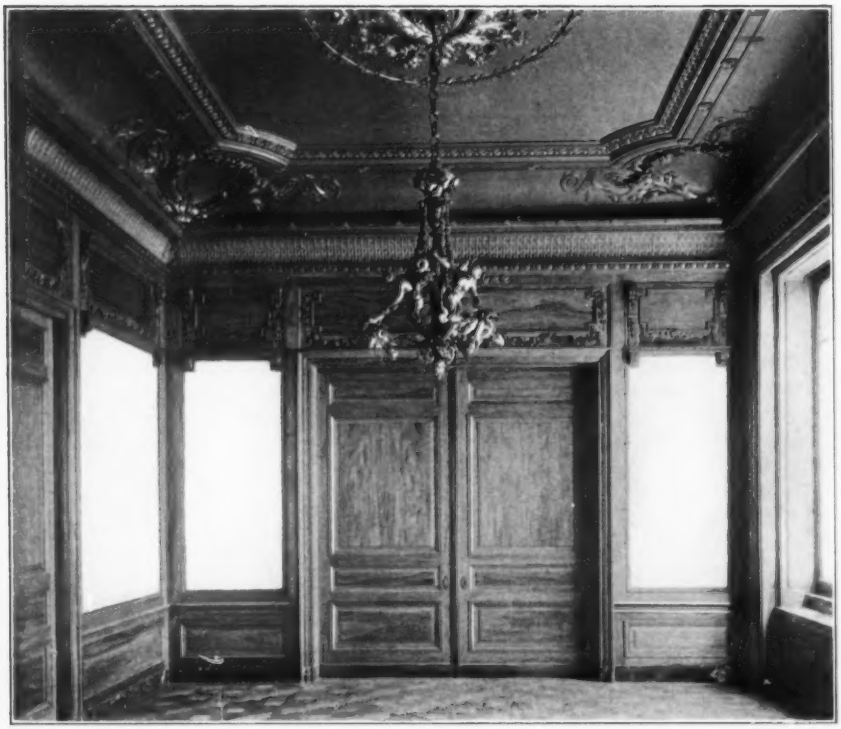
the chief dining-room, the palm-room, the banqueting hall and all the corridors. In addition, a great deal of marble flooring has been used, and some particularly handsome marble chimney-pieces in rooms otherwise finished in wood. The work of setting this marble, particularly of the elaborate arches in the main restaurant, was an exceedingly delicate and difficult job, and was accomplished by the two contractors with the greatest skill and success. One of these contractors is Messrs. Batterson & Eisele,

and the other John H. Shipway & Bro., and no better work of the kind has ever been achieved in this country. The large amount of ornamental metal work which the hotel contains was also divided between two companies, the Hecla Iron Works and William H. Jackson Co. Articles published elsewhere in this issue describe in detail the work accomplished by each of these contractors, and here it is only necessary to state that the Hecla Iron Works are responsible for the elaborate bronze marquise on the exterior, for the metal sashes and window frames, which have been used throughout the building, and for the handsome canopy in which the swing-doors are housed. These doors, by the way, were manufactured by the Van Kannel Revolving Door Company, and are specially adapted to hotel use. The Hecla Iron Works also executed most of the elevator grilles, the elevators being, of course, furnished by the Otis Elevator Company. The William H. Jackson Company, on the other hand, executed the ornamental metal-work in all the principal rooms, the grille on the counter in the office, the elevator enclosure on the main floor, and the mantelpieces in the private apartments. The hardware, part of which was imported and part manufactured in this country, was all of it supplied by Yale & Towne, and it is throughout specially designed and carefully executed. The lighting fixtures are also worth special consideration. They are the work of the Sterling Bronze Company, and are extremely various in character, to suit the different treatment of the rooms. Attention should be particularly called to the handsome chandeliers in some of the main rooms, to the delicate and graceful side lights in the restaurant, and to the uniformly simple and excellent fixtures in the private apartments. In the same way that part of the furniture, which was manufactured in this country, came from the shops of the Pooley Furniture Company, of Philadelphia. The models from which this furniture was designed are peculiarly appropriate to the purposes for which they are used; the wood is of the best quality, and the workmanship the finest that could be obtained. The same is true of the pianos, of which there are forty-seven instruments in the hotel, all designed by the Art department of Steinway & Sons, and manufactured by the same firm. Another interesting piece of work is the stained glass, through which the lobby, the hall leading to the restaurant, and the palm-room obtain their light. This is the product of the office of Duryea & Potter, the well-known decorators, and contributes much to the effect of these rooms. It will be seen, consequently, that the same idea runs through every detail of the hotel, and that the various contractors have contributed their full share to the pervading high quality of the result. They were employed with that end in view, and have fully justified their selection.

A PIECE OF EXHIBITION WOODWORK.

The illustrations and the text that appear in this issue of the Architectural Record are a sufficient demonstration of the fact that the St. Regis Hotel is a remarkable building—remarkable even among a numerous class of buildings that have been tending more and more in their development of recent years toward the superlative. From a technical point of view, that is in all matters that concern material, workmanship and equipment, the St. Regis is almost a piece of exhibition work. In the smallest details there is clear evidence not only of the most careful and skilled workmanship, but of a most competent selection of the highest grade of materials. In some cases, indeed, the selection of material may quite properly be described as opulent. There is every evidence in every particular that choice was made from immense resources, and this characteristic contributes so much to the total effect of richness produced by the building upon the spectator that it ought not to be overlooked, for it is a contribution that may easily be missed and hidden by the more positive and tangible elements of the decorative results. One can easily imagine how much of the success achieved by the architects in the St. Regis would be quite eliminated had their efforts not been supported and augmented by a quality of effect entirely due to the large selection offered them by certain firms whose particular resources are abundant in an extraordinary degree.

RECEPTION ROOM OFF BANQUETING HALL, HOTEL ST. REGIS.
(Wood Supplied by I. T. Williams & Sons.)



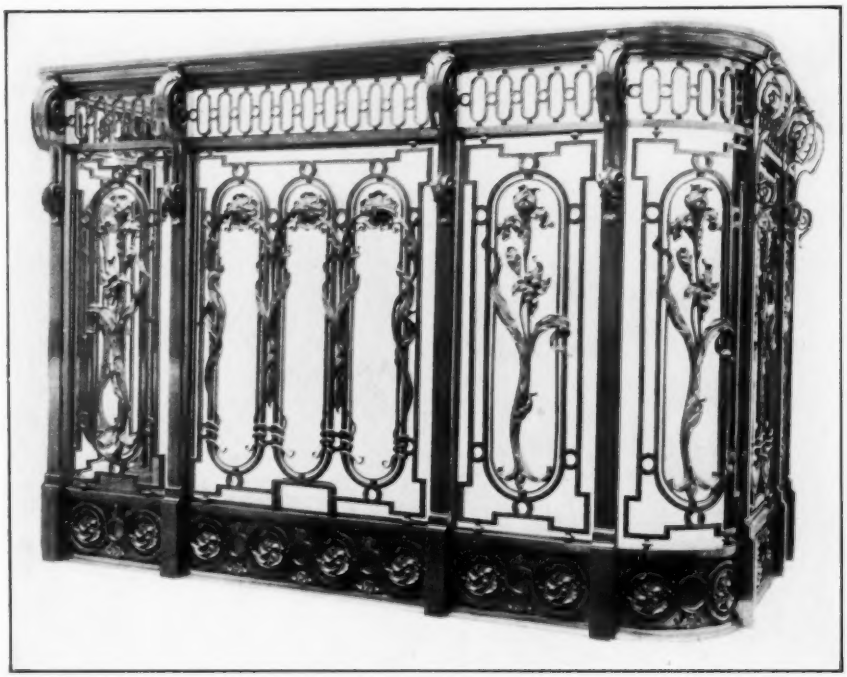
ROLLING DOORS IN SMALL RECEPTION ROOM, HOTEL ST. REGIS.
(Wood Furnished by I. T. Williams & Sons.)

These remarks hold particularly true in all that concerns the woodwork of the building. This woodwork, indeed, is one of the most successful features of the structure from the point of view we are now discussing. Good woodwork no doubt is not an uncommon thing in our buildings, but fine wood is a rarity—a rarity because here is a case where "selection" constitutes almost the very essence of expense. Moreover, even selection itself, no matter how carefully performed, is a limited affair unless exercised upon a large and carefully accumulated stock, and stocks of this kind necessitate not only abundant capital but extensive connections and large experience. These are just the very facts which the appreciative eye quickly recognizes in the decorative wood used in the St. Regis. It is a splendid exhibition. No finer material has been used in any interior in New York. The English brown oak, the red mahogany, the Circassian walnut and the Prima Vera are fine even to the point of being a decoration in themselves. Much favorable comment has already been passed upon this element of the decorative scheme by architects and by other competent judges who have seen the result, and Messrs. I. T. Williams & Sons, 25th Street and 11th Avenue, who supplied the product are to be congratulated upon demonstrating in so signal a manner the premier position which they have so long held in the fine lumber trade of the United States.

BRONZE WORK AND MANTELS BY WM. H. JACKSON CO.

A large part of the artistic elegance of the interior of the Hotel St. Regis is due to the graceful effect of the decorative bronze-work, made by William H. Jackson Company, of 29 East 17th St. All the work in the principal rooms has been done by this company. Some of the more prominent and noticeable pieces are shown in illustrations on this and other pages. The grille on the counter in the office (photograph below), the main stair rail (page 575), the great three-arch mirror frame in the restaurant (page 580), and the elevator enclosure on the main floor (page 571), are especially deserving of attention.

Not only the bronzework, but all the mantels and fireplaces, both wood and marble, in the apartments are the work of the Jackson



BRONZE COUNTER RAILING IN THE HOTEL ST. REGIS.

Company. The marble mantels are all copies of French patterns, some being tastefully trimmed with French gold metal work. These mantels and fireplaces have a solid, comfortable look. Their lines are simple, strong, and graceful. The gold metal work has a very handsome effect.

Art and utility have been wrought together with unusual success in the tiling which covers the floors and walls of the bath-rooms, and the walls and ceilings of the kitchen.

In all of this work no expense of money or endeavor has been spared, the aim being to produce something representative of the highest development of this important branch of decorative art.

EXAMPLES OF FURNITURE FOR THE HOTEL ST. REGIS.
(Made by the Pooley Furniture Co.)

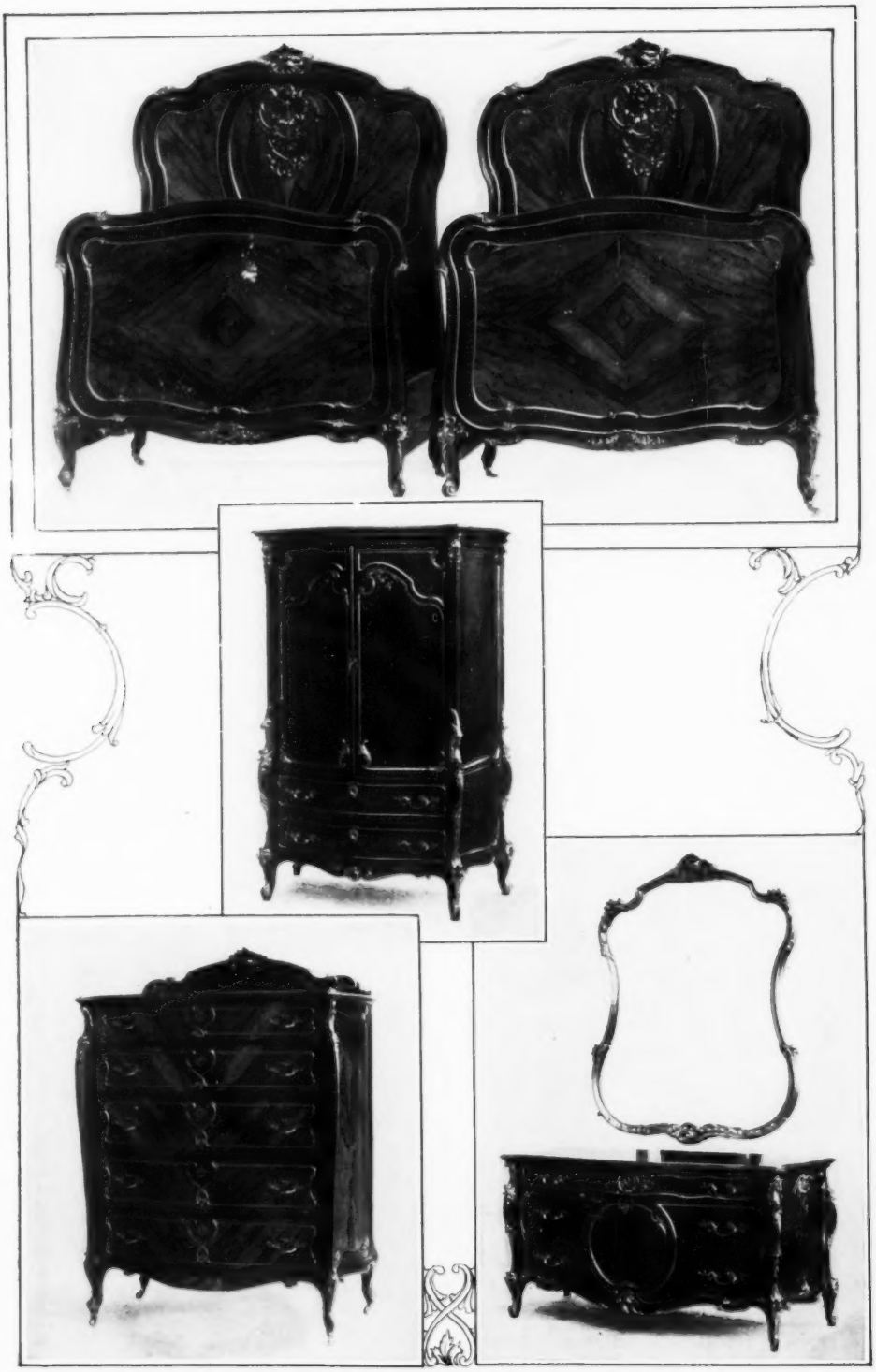
THE ART FURNITURE FOR THE HOTEL ST. REGIS.

The furniture built for the St. Regis Hotel by the Pooley Furniture Company, of Philadelphia, is to be admired not more for its individual beauty and elegance than for the excellent taste with which it has been designed to harmonize in all its lines and colors with the architecture and finish of the rooms wherein it is placed.

Most of the furniture is made after the fashion of the Louis XIV., XV. and XVI. periods, the material used being the very finest of selected Circassian Walnut, Satinwood, Prima Vera, Mahogany and English Oak. The accompanying photographs illustrate the designs of some of the pieces, but a black and white picture can hardly do justice to the rich deep tones in the wood and upholstery of the furniture itself. The suits cost from five hundred to five thousand dollars. The beautiful chairs which are used in the Palm Garden and illustrated on page 598 cost $55 each and are considered the best of their kind and the most elaborate used for this purpose.

The Waldorf-Astoria and the new Manhattan Hotel contain furniture of the Pooley make, and the Bellevue-Stratford, of Philadelphia, is now being furnished by the same firm.

The address of the Pooley Furniture Company is Indiana Ave., Sixteenth and Seventeenth Sts., Philadelphia. The New York showrooms are in the Furniture Exchange, 43d St. and Lexington Ave.



EXAMPLES OF FURNITURE FOR THE HOTEL ST. REGIS.
(Made by the Pooley Furniture Co.)

WHY THE FRAME OF THE ST. REGIS IS "RIGHT."

IT is not often that a firm attains the very highest prominence in its line of work in so short a space of time as five years. That has been the case with the Thompson-Starrett Company. In fact, the company took its place in the first rank among builders immediately on its organization in 1899. This was because the Starrett Brothers, who were the practical members of the company, had already behind them years of experience in building, and because as their business grew they surrounded themselves with a corps of thoroughly competent and intelligent workers.

The result of this high-class organization shows itself in the number and quality of the building contracts the Thompson-Starrett Company has secured and executed in the less than five years of its existence. The company has built, or has now under contract, fifty large buildings, of which twenty-one are in New York City, four in Brooklyn, five in Boston, three in Pittsburgh, two in Philadelphia, eight in Princeton, N. J., one in Newark, N. J., two in Washington, D .C., two in Chicago, one in St. Louis, one in Cleveland and one in Winnipeg.

The Thompson-Starrett Company has an enviable reputation for the speed with which all their work is done. They realize the importance to the owner of a property of having his building completed without delay and the consequent loss of interest on the capital represented. With this idea in mind, and aided by their comprehensive experience in such matters, they exercise much care and forethought in the making of arrangements before starting to build. Everything is planned in advance, dates for delivering of materials fixed, and the work goes on smoothly and rapidly.

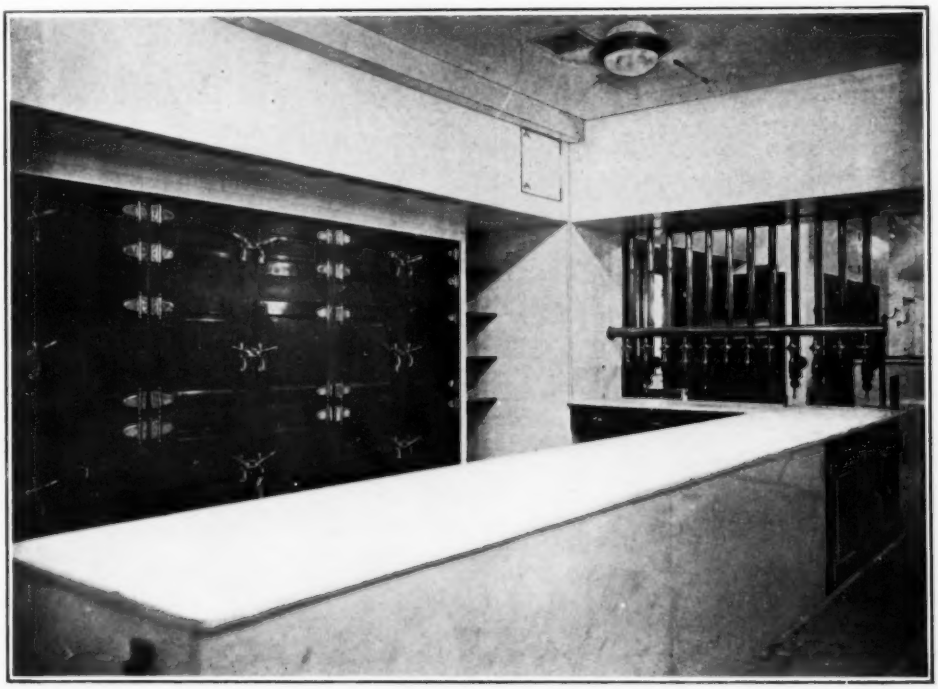
The Thompson-Starrett Company were the designing engineers, as well as the erectors, of the constructional steel frame and foundation work of the St. Regis Hotel. They were also the contractors for the foundations and masonry work.

The office of the Thompson-Starrett Company is at 51 Wall Street, New York City.

REFRIGERATORS IN THE HOTEL ST. REGIS.

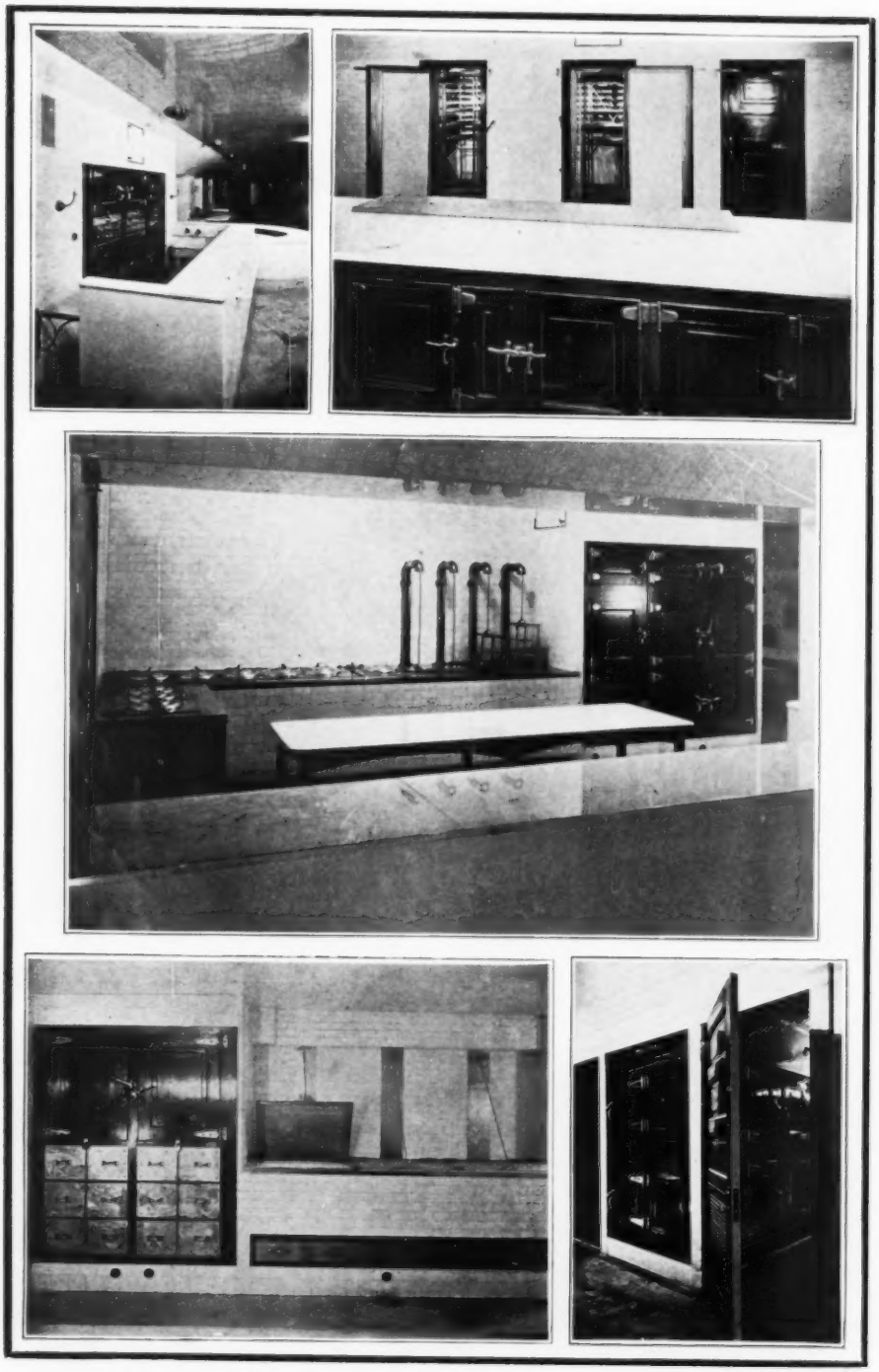
One of the most essential problems in a hotel is not only to cook and serve the food properly, but to keep it properly. If the public could see some of the Refrigerators in which their food is kept they would change their order of strawberries and cream to a soft-boiled egg.

There is no department in the St. Regis that has received more attention than the kitchen. If one were to dine in one of the large



SERVICE REFRIGERATORS, HOTEL ST. REGIS.
Installed by Jewett Refrigerator Co.

Refrigerators instead of in the cafè, the only possible objection would be the difference in temperature. You would be surrounded by pure white glass one inch thick, resembling the finest polished Carrara marble, the corners being finished with liquid glass, making practically a glass room all in one piece. You could use for a table one of the shelves which are made of polished aluminum; in fact, you would be in one of the most perfectly sanitary places that could possibly be made. Each department in the kitchen has refrigerators especially designed for it. The baker has a refrigerator for the storage of his stock. The pastry cook has service-refrigerators



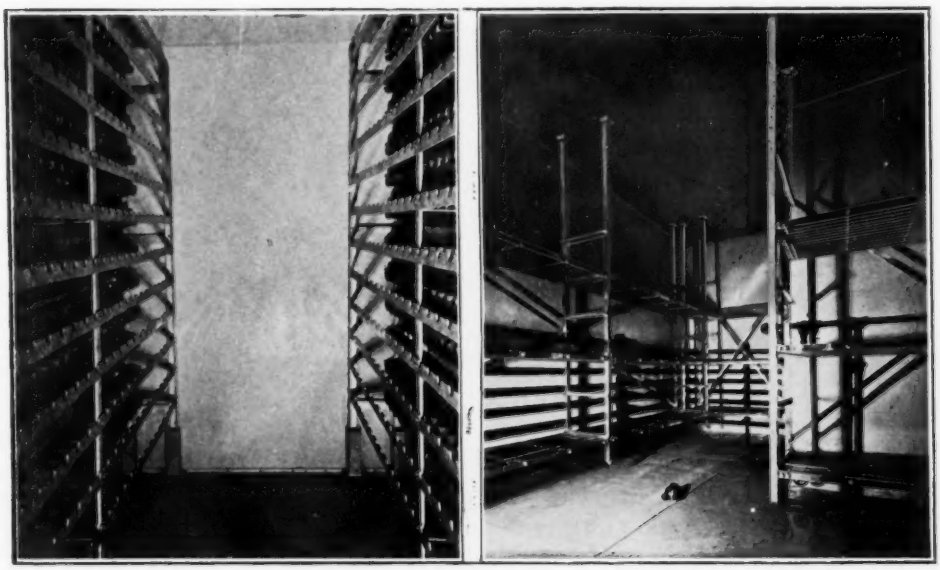
VARIOUS TYPES OF REFRIGERATORS, HOTEL ST. REGIS.
Installed by Jewett Refrigerator Co.

made for the storage of fancy cakes. The ice cream is kept in German silver covered refrigerators in which are porcelain jars for the storage of some thirty different kinds of ice creams.

The *garde-manger* and salad departments have several refrigerators, each compartment arranged for some specific purpose.

All departments where cold dishes are served are equipped with cold plate refrigerators. The fish and sea-food have special refrigerators, the fish being stored in cracked ice in large porcelain crocks, the sea-food in drawers faced with German silver to avoid corrosion.

In all, throughout the kitchen and pantries there are fifty-two (52) refrigerators, and in each case the same care in designing and



WINE BINS IN HOTEL ST. REGIS.
Installed by Jewett Refrigerator Co.

construction has been followed; and, while the first cost is considerably more, there is no doubt but what they are enduring fixtures, and the saving in the cost of replacing and repairing, to say nothing of the better facilities for handling the food, will in the end justify such an installation.

Mr. Allston Sargent, Manager of the Jewett Refrigerator Company, office in the St. James Building, New York, states that in the fifty-five years that this company have been manufacturing refrigerators they have never provided a more complete installation with the exception, perhaps, of two or three of the most expensive private houses.

THE ELLIS AUTOMATIC EJECTOR OR SEWER LIFT.

One of the most important features in connection with the Hotel St. Regis, and this applies equally to large buildings of any description, are the Ellis Automatic Ejectors or Sewer Lifts, for the removal of sewage and all liquid wastes as rapidly as created, and the absolute prevention of any kind of back flow of sewage or sewer gas from the public sewers. In the construction of the Hotel St. Regis only the best material and the most modern and complete machinery are used.

The problem of the disposal of sewage is simply solved when there is a good fall from the basement level to the public sewer by properly laid and properly trapped gravitation sewers. Where gravitation cannot be obtained, artificial means of raising and discharging the liquid waste and ground water must be employed. By means of the Ellis ejector system, a new and up-to-date device, all the liquid refuse of a building can be discharged in a simple, sanitary, and economical manner, without coming in contact with the air of the building; and making the entry of sewage or sewer gas from the public sewers an impossibility. The motive power in the Ellis ejector system is compressed air, steam, electricity, or water. It is applied in the following manner:

In a chamber built of brick or iron, either in the basement floor or outside of the building, an air-tight iron vessel, called a receiving tank, is placed at such a level that all the sewers and drains of the building can have a good fall into it. From the receiving tank a discharge pipe is laid to the point of outfall, which is generally the public sewer in the street. The sewage flows from the drains through the inlet pipe into the receiving tank, and gradually rises therein until it reaches the under side of the float. The air inside of this float, being at atmospheric pressure, causes the float to rise with the sewage, and this opens an operating valve, when the air, thus automatically admitted into the receiving tank on the surface of the sewage, drives the entire contents before it through the opening at the bottom, and through the outlet pipe into the iron sewage discharge pipe. The instant the pressure is admitted upon the surface of the sewage the Ellis Positive Check valve in the inlet pipe closes and prevents the fluid from escaping in that direction. The system can be cross connected with air, steam, or water, and arranged with by-pass valves operated by hand if desired. A booklet describing this system may be obtained by writing to The Ellis Company, of 216 West 23d Street, New York.

THE LIMESTONE WALLS.

JAMES GILLIES AND SONS' PART IN THE CONSTRUCTION OF THE ST. REGIS.

THE exterior stone work of the Hotel St. Regis measures up to the same standard of substantial elegance which obtains in every detail of the construction and equipment of the building.

This work has been done by James Gillies and Sons. The material used in the stone work of the foundation is granite. The four walls of the hotel, from ground to top, are of blue Indiana limestone, carefully selected especially for the St. Regis.

Builders will be interested to learn that Gillies and Sons were awarded the contract a few weeks before the actual setting of the stone began. Twenty-three weeks only were taken up in the setting of the eighteen stories.

They were enabled to do this by the resources of equipment and material afforded by their stone yards and works in Long Island City. The capacity of the Gillies works is equal to even a greater test than that made by the quick work done on the St. Regis.

The firm of James Gillies and Sons is an old one, having been founded in 1852 by the late James Gillies. The business is now being conducted by his son, John Gillies.

James Gillies and Sons have set up the walls of very many of New York's fine buildings. The St. Regis is representative of the sort of work they are accustomed to.

IN MARBLE HALLS.

In all the world there is probably not another building, covering an equal ground space, that contains such an assemblage of rich and expensive marbles obtained from foreign and domestic quarries. Five hundred thousand dollars is a close estimate of the cost of the interior marble and mosaic.

John H. Shipway & Brother were the contractors for the greater part of this work, including the marble dallage and mosaic floors throughout the building, the paneled wainscot and moulded door architraves in corridors, the moulded and carved paneled enclosures of elevators, the stair wainscot and elaborate work in the bath-rooms.

A careful selection of marble was made at the various quarries. The photograph on page 601 shows a view of one of the corridors on the upper floors, but it does not convey the impression of repose and grandeur one gets by a walk down one of them. No expense has been spared to make them superb and the finest. Lined as they are from floor to ceiling with carefully chosen slabs, which in their arrangement and selection do credit to the firm of John H. Shipway & Brother and the expert inspectors acting for them at the several quarries, nothing surpasses the treatment of these corridors the world over.

Particular care has been exercised not only with regard to the more pretentious or ornate pieces, but even to the most out-of-the-way nook and the most simply utilitarian place where marble is made use of at all. This was in accord with the policy of the owners of the hotel, and with the custom of Messrs. Shipway, who "have the habit" of thoroughness in all their contracts.

All the interior sills of windows are made of Verde Antique marble, quarried on the French side of the Alps.

The Caen stone and the Istrian marble work in the Palm Court add much to the attractiveness of the place. An illustration of the Caen stone is shown on page 584. In the elevator halls and at many points throughout the building may be seen some very skilful and artistic carving.

One of the most interesting features of the marble work in the St. Regis, both on account of its beauty and style, and because it cannot be found in any other hotel in the United States, is the

pleasing effect of the dallage floors, with borders of colored imported marble worked into many artistic designs and patterns. Only experts in the execution of such floors can appreciate the care necessary to produce such results. An imperfect impression of the lobby floor may be obtained by referring to illustration on page 577.

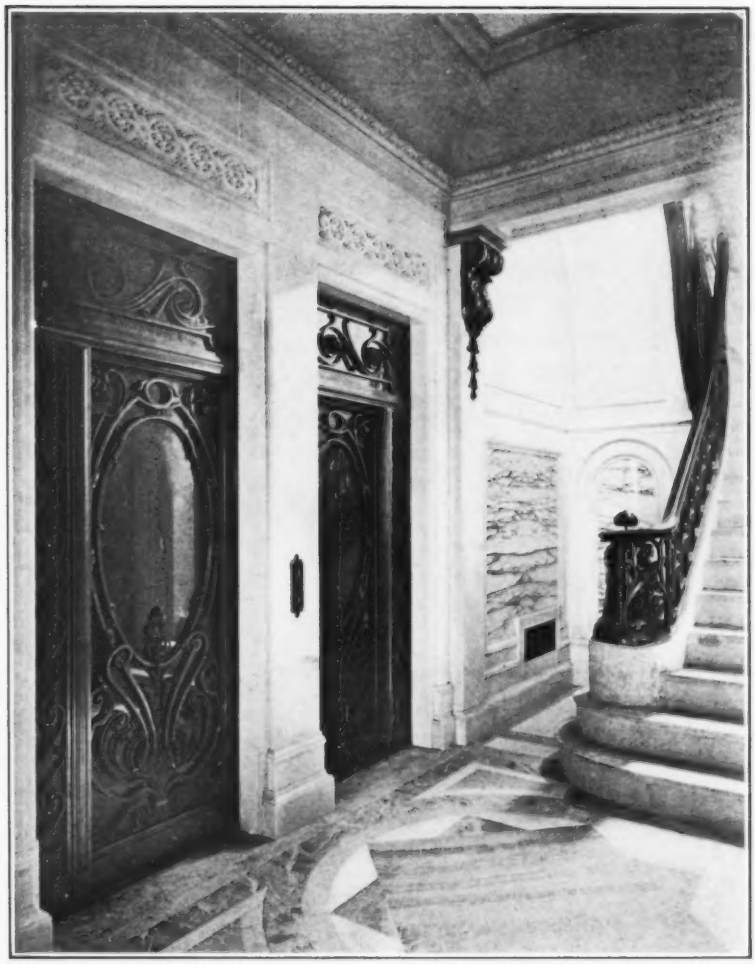
It is no simple matter to do so conspicuous a work as this in a building where such exacting standards of art and scientific construction obtain, and have the result pass the keen inspection of the architect. The work of the Shipway firm has not only done so, it has brought forth admiring comment from those who know the difficulties attendant upon so large a task.

John H. Shipway & Brother furnished the marble work in hundreds of large buildings on Manhattan Island. Among these are many hotels. We mention a few whose reputation for style and elegance testify to the high standard of work done by them: The Manhattan Hotel, Hotel Vendome, Hoffman House, Buckingham, Marlborough, Sherry's, The Ansonia, Marie Antoinette, the Lorraine, Hotel Navarre, the Algonquin and the Imperial Hotel.

The Shipway works are at the foot of East 136th Street. Whenever a fine building is erected and the best of everything is wanted, they are in demand by architects and builders, and rightly so.

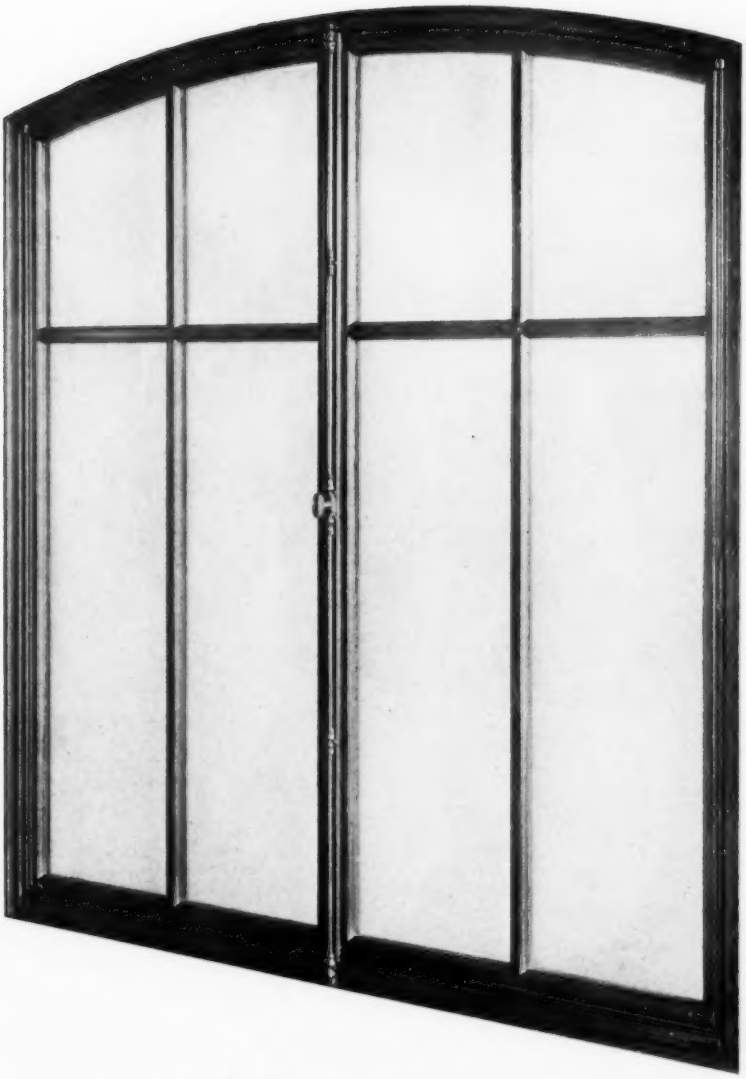
ORNAMENTAL METAL WORK IN THE HOTEL ST. REGIS.

The ornamental metal-work for this hostelry is of the most elaborate character, the details embodied in it being as difficult to handle as the manufacture has ever undertaken. No matter where the eye turns, the intricate designs of the metal worker are apparent,



BRONZE-FINISHED IRON STAIR RAILING AND ELEVATOR ENCLOSURES.
Executed by the Hecla Iron Works.

whether viewing the unique elevator enclosure work, the stair-railings, which are enriched with scroll work, the treatment of the front entrances with rich bronze grilles, the ornate character of the solid bronze marquise, or the balcony railings on the exterior of



BRONZE WINDOW SASH IN THE HOTEL ST. REGIS.
Executed by the Hecla Iron Works.

BRONZE MARQUISE, HOTEL ST. REGIS.
Executed by the Hecla Iron Works.

the building. The most striking of the above mentioned features is the bronze and glass marquise, extending nearly the entire length of the 55th street side of the building. This piece of work is one of the finest, if not the finest, marquise in the world, and will bear the closest scrutiny. It is a study for the lover of the beautiful in art metal work, it being almost inconceivable how the wealth of foliage adorning the various scroll members could be produced in solid metal. It may be interesting to some of our readers to know that considerable over twenty tons of bronze alone were used in the construction of this canopy. The massive brackets alone weighing a ton each.

An important point in the construction of the elevator enclosure grilles is the use of electro-glazed glass behind the door and stationary panels.

This glass is cut in small squares and glazed electrically in light brass frames, a method of arrangement which has been proven to be a perfect barrier against fire.

Although the intense heat has the effect of "crazing" and cracking the glass, the four-inch square brass frames securely hold the glass in position, even resisting the action of water when thrown against the hot glass. The picture of an elevator enclosure shown on a preceding page is from a photograph taken before the electro-glazed glass was in its place. It will serve, however, to illustrate the handsome design of the metal-work.

Another unique example of the metal worker's skill is the bronze cab stand to be seen between the two entrances on 55th street.

While not being especially ornamental, the bronze window frames and sashes throughout the structure afford a topic for special consideration, from the fact that in this building has been produced a window frame and sash which shows details in mouldings never successfully executed before, and while having all the effectiveness of solid bronze castings, are much less costly than the latter.

This saving in expense is accomplished by the use of heavy bronze mouldings drawn over dies of various forms, the resulting hollow framing being filled with a fireproof material, which not only gives more stability to the frames, but affords a core which is absolutely fireproof. It may not be generally known that the usual "kalameined" or metal-covered window frame is drawn over wood which, if the frame be exposed to a high temperature, becomes charred, and hence weakens the frame.

There are 600 of these bronze windows and sashes in the building, some of which are of quite an elaborate design, and all of which, together with the ornamental metal-work mentioned above, were executed by the Hecla Iron Works, whose offices and works are at North 11th and Berry streets, Brooklyn.

HIGH ART IN DECORATIVE MARBLE.

The marble and Caen stone work in the main portions of this beautiful hotel was done by the well-known firm of Batterson & Eisele, 431 Eleventh Avenue, under the personal supervision of Mr. Eisele, the senior member of the firm.

In the first story, the office, lobbies and adjoining corridors have a heavy Istrian marble dado, and highly ornamented pilasters of Caen stone, the latter material being used also for all the work above the dado. The Main Restaurant, fronting on Fifth Avenue, and the Ladies' Restaurant adjoining it, are finished in the most decorative manner, a combination of Rubio, Breche Violette and Pavonazzo marble, beautifully moulded and inlaid, being used. A view of the restaurant is shown in the illustration on page 580.

All the door and window openings of the large oak room, in the southeasterly corner of the building, are finished with heavily moulded Italian marble. The Banquet Room, facing Fifth Avenue, on the second story, has all the walls, from floor to cornice line, finished in pure white Vermont statuary marble, the same material being employed for the finish of all doors and windows in this room.

One of the finest pieces of marble work is in the large corridor running east and west on the second story, and including the main staircase. For this Blanco P., with Pavonazzo for the paneling, has been used. The arched doorway, illustrated on page 583, is an imposing yet graceful example of the marble-workers' art. The mantel picture on page 590, to any lover of the beautiful, is worth going far to see.

The firm of Batterson & Eisele have done the marble and mosaic work in the Waldorf-Astoria, the Holland House, the Manhattan, Savoy and other hotels in New York and other cities.

The marble and mosaic decorations of a great number of public and private buildings bear testimony to the skillful workmanship of this firm. Below we mention a few of these buildings:

Equitable Life Assurance Society Building, New York.
New York Stock Exchange.
Reading Room of the Congressional Library, Washington, D. C.
Prudential Insurance Company Building, Newark, N. J.
Union Trust Company, New York City.
United States Trust Company, New York City.
Home Life Insurance Company, New York City.
Washington Life Insurance Company, New York City.
Corn Exchange Bank, New York City.
American Exchange Bank, New York City.
Building for Blair & Co., New York City.

The town residences of Wm. D. Sloane, J. H. Hammond, George W. Vanderbilt, the town and Newport residences of the late Cornelius Vanderbilt, the Newport residence of E. J. Berwind, the residences of Mr. Widener and Mr. Elkins near Philadelphia, H. M. Flagler's residence, Whitehall, at Palm Beach, Fla., as well as hundreds of others.

ORNAMENTAL HARDWARE, LIBRARY DOORS, HOTEL ST. REGIS.

THE HARDWARE OF ORNAMENT.

THE Hotel St. Regis is equipped throughout with the most artistic Ornamental Hardware and with locks of the highest type. The locks throughout are of the Yale pin-tumbler principle with duplex (or two) cylinders; one cylinder is operated by the change key and the other by the master-key, thus retaining the security of the former and the convenience of the latter without impairing their value as Locks.

A special feature of the Room Door Lock is that when locked from the inside the door cannot be opened by the master-key, thus obtaining freedom from intrusion from servants. Locks with the opposite operation, however, are kept in stock for guests who may not desire this feature.

The Adjusters for Casement Windows were especially designed and are of ingenious character.

The finish of hardware on the upper floors represents a natural oxidation and was produced through the use of gases and the fumes of acids in special ovens built for this finish.

While of extreme elegance the Hardware of Ornament on the upper floors is simple in character; that on the lower floors is of special design and is finished in Mercury Gold.

The entire contract was one of the largest which has been awarded in New York and the hardware is thoroughly in keeping with the reputation of the makers:

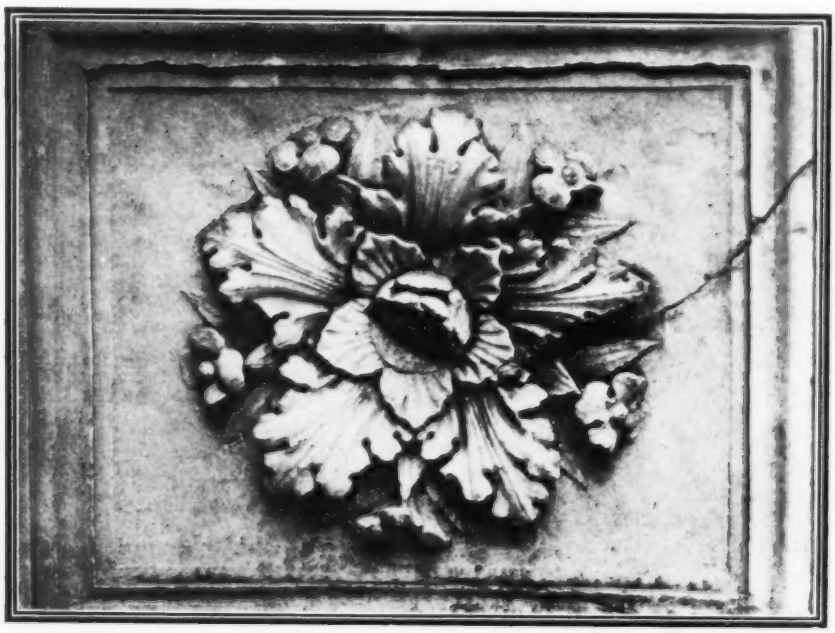
The Yale & Towne Mfg. Co., General Offices, 9-11-13 Murray St. Exhibition Rooms, 242 Fifth Ave., New York City.

THE VAN KANNEL REVOLVING DOOR.

An interesting and important feature of the Hotel St. Regis is the unique and attractive entrances, greatly enhanced by the installation of the Van Kannel Revolving Doors. The use of these doors has become so general throughout the country as well as abroad, that the public does not fully realize the great advantage they possess over the old-style hinge doors. Revolving doors are particularly well adapted to the conditions met with in all prominent hotels.

This door, which is always closed to the weather yet open to coming or going guests, is built on a simple principle that architects have striven to apply for many years. It is used not only in entrances of buildings, but in interior passages, preventing the passage of air currents and sound.

In graceful design the St. Regis revolving doors, perfectly in keeping with their surroundings, surpass any that have heretofore been produced, and were made and installed by the Van Kannel Revolving Door Company, 524-34 East 134th street.



FINEST MODERN HOTEL

Illustrated

THE ARCHITECTURAL RECORD

JUNE

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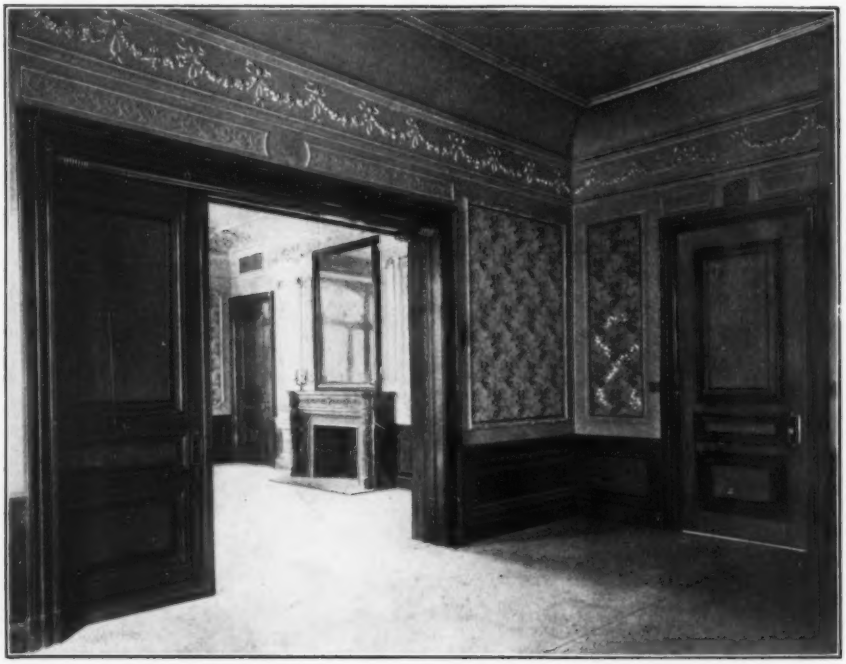
W. & J. SLOAN

INTERIOR WOODWORK



Our illustration shows one of the suites of rooms in the St. Regis Hotel, the trim work of which, in Circassian Walnut, was done by W. & J. Sloane

ARCHITECTS appreciate the fact that the St. Regis is the most perfectly constructed hotel building in the world. Only the most carefully selected woods and the highest class of work were acceptable to the owners, and that we furnished and set in place the hardwood trim, doors, etc., on sixteen floors (about 300 rooms) indicates our ability to execute interior woodwork and kindred decorations of the highest grade.

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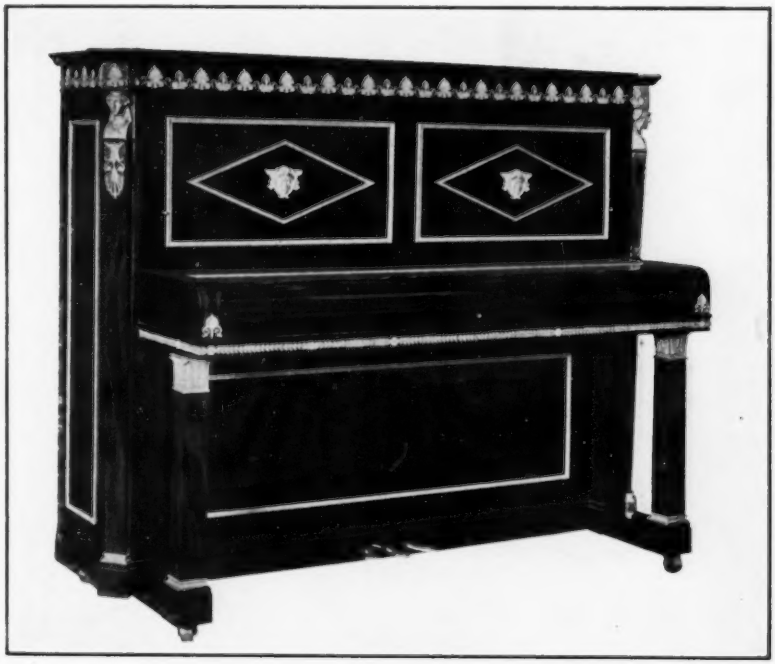

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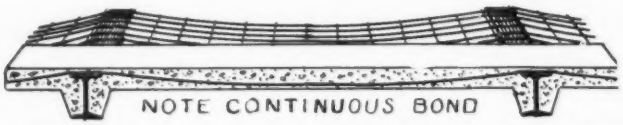

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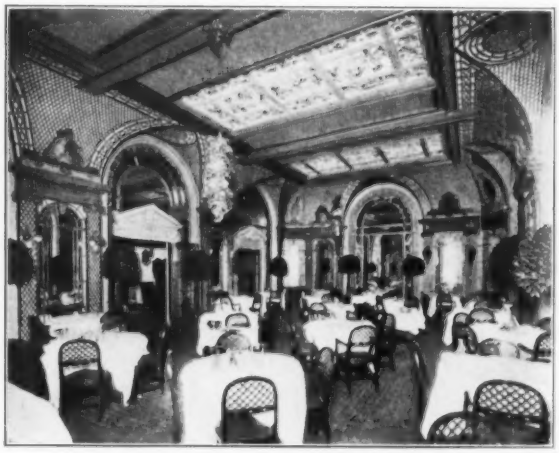

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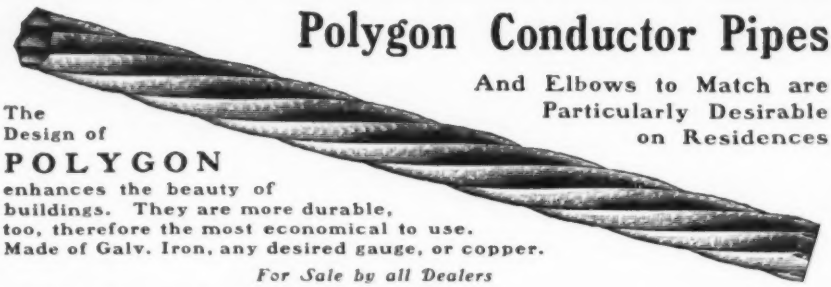

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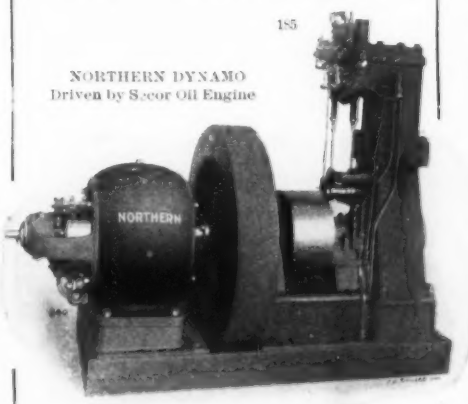

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Rogers Iron Co.	Springfield, Mass.	
Bronze Statuary and Founders		
Bureau Bros.,	21st St. and Allegheny Av., Philadelphia.	Tioga 2302.
The Gorham Co.	Broadway and 19th St., New York City.	Gramercy 5140.
Winslow Bros. Company,	Chicago, Ill.	
	New York Office: 160 Fifth Ave.	Tel. connection.
Builders		
Isaac A. Hopper & Son, (Incorporated),	1170 Broadway, New York City.	Madison Sq. 2455.
Tidewater Building Co.	25 West 26th St., N. Y. City.	Madison Sq. 800.
Thompson-Starrett Co.	51 Wall St., New York City.	Broad 3908.
D. C. Weeks & Son,	289 Fourth Ave., New York.	18th St. 1938.
Building Granite		
Jos. B. Reinhalter & Co. Barre, Vt.; Philadelphia, Pa.; Cincinnati, O.		
Builders' Materials		
American Bridge Co.	100 Broadway, New York	Cortlandt 1826.
	Frick Building, Pittsburgh. 1315 Monadnock Block, Chicago.	
American Enameled Brick & Tile Co., Fine Enameled Brick and Tile.	1 Madison Avenue, New York.	18th St. 751.
John P. Kane Company, Dealers in all kinds of Masons' Building Materials.	Fourth Ave., Cor 22d St., New York.	18th St. 292.
The Kreischer Brick Mfg. Co.	119 East 23d St., New York City.	Gramercy 1877.
O. D. Person, Offices, 160 Fifth Ave.; Yard, 137th St. and Madison Ave.		Harlem 219.
Sayre & Fisher Co, Fine Face Brick,	207 Broadway, N. Y.	Cortlandt 5025.
N. & G. Taylor Co., Philadelphia, Pa.	1123 Broadway, New York.	Madison Sq. 3225.
Tiffany Enameled Brick Co.	Momence, Ill.	
Burlaps		
Richter Mfg. Co.	43 Franklin Ave., Tenafly, N. J.	
Cabinet Work		
Glaser, Rohrer & Co.	First Ave. and 41st St., New York.	38th St. 835.
C. J. Wadsworth,	1304-6 Euclid Ave., Cleveland, O.	
Caps for Columns and Pilasters, for interior and exterior		
W. T. Crook,	1133 Broadway, New York.	Madison Sq. 2047.
Hartmann Bros. Mfg. Co.	Mt. Vernon, New York.	Mt. Vernon 600.
A. P. Lombard Co.	99-101 Bristol St., Boston, Mass.	Tremont 58.
Carpets		
Persian Rug Manufactory,	898-900 Broadway, New York.	18th St. 2010
W. & J. Sloane	Broadway and 19th St., New York City.	Gramercy 2200.
Cedars, furnished and planted		
Wadley & Smythe,	1 5th Avenue, New York.	38th St. 1512.
Cement		
Atlas Portland Cement Co.,	30 Broad Street, New York.	Broad 4451.
John P. Kane Company, Trowel Brand Portland Cement.	Fourth Ave. Cor. 22d St., New York.	18th St. 3231.
V. C. & C. V. King Co., Knickerbocker Caen Stone Cement.	513 West St., New York.	Spring 294.
Lehigh Portland Cement Co.	Allentown, Pa.	
Non-Staining Cement Co.,	156 Fifth Ave., New York.	18th St. 5266.
Union Akron Cement Co., Akron Star Brand Cement,	Main Office: 141 Erie Street., Buffalo, N. Y.	Long dist. Tel. Seneca 616.
	Elmer E. Stanton, 150 Nassau Street, N. Y. City.	John 2756.
Church Decorations		
Walter Janes & Company.	123 East 23d St., New York City.	
Civil and Forest Engineer		
F. von Hoffman	St. James Bldg., 1133 Broadway, New York.	
Coated Nails		
J. C. Pearson Company,	Fuller Building, New York City.	Gramercy 4110.
	Boston; Chicago.	
Cold Storage		
McCray Refrigerator Co.	Kendallville, Ind.	

		TELEPHONE
Columns (Lock Joint)		
W. T. Crook,	1133 Broadway, New York.	Madison Sq. 2047.
Hartmann Bros. Mfg. Co., "Koll's Pat." Lock Joint Columns for Interior and Exterior Use.	Mt. Vernon, N. Y.	Mt. Vernon 600.
	New York Office: 1123 Broadway.	Madison Sq. 1682.
Doane & Jones Lumber Co.,	Elmira, N. Y.	
Combined Water Heaters and Garbage Crematories		
S. Wilks Mfg. Co.,	3500 Shields Ave., Chicago, Ill.	Yards 866.
Concrete Engineers and Builders		
Ransome & Smith Co.,	11 Broadway, New York.	4784 Broad.
Wight-Easton-Townsend Co.,	603 West 45th St., New York.	38th St. 2513.
Conductor Pipes		
American Rolling Mill Co.,	Cincinnati, O.	
Conduits		
American Conduit Co.	170 Broadway, New York.	Cortlandt 3854
	822 Manhattan Bldg., Chicago, Ill.	
	336 Macy St., Los Angeles, Cal	
Contracting Engineer		
Robert Scott,	607 Arch St., Philadelphia.	
Contracting Electrical Engineering		
E-J Electric Installation Co.	503 Fifth Ave., N. Y. City.	38th St. 3668.
	111 Summer St., Boston.	Oxford 1621-2.
Cooking Ranges		
Duparquet, Huot & Moneuse Co.	43-45 Wooster St., New York City.	Spring 2473.
Cut Stone		
William Gray & Sons,	30th Street, below Walnut, Philadelphia.	
Damp-Resisting Compounds		
Gross & Horn, Manufacturers of Damp-Resisting and Water-Proof Compounds.	249 Front St., New York.	John 3973
Decorators		
Brooks Household Art Co., Interior Decorators and Manufacturers of Furniture to Special Design,	637 Prospect Street, Cleveland, O.	
Door Hangers		
McCabe Hanger Mfg. Co.	532 West 22d St., New York.	18th St. 946.
Doors		
Wm. H. Brodie & Co.	45 Vesey St., New York City.	Cortlandt 3415.
Drawing Inks		
Charles M. Higgins Co.,	Main Office: 271 Ninth St., Brooklyn.	South 586.
Dumb Waiters		
Sedgwick Machine Works,	110 Liberty St., New York.	Cortlandt 2916.
James Murtaugh Company,	202 and 204 E. 42d St., New York.	38th St. 1128.
Dynamos		
Northern Electrical Mfg. Co.	Madison, Wis.	
Electrical Equipment		
Harry Alexander, Engineer and Contractor.	Astor Court Building, 34th St., New York.	38th St. 6090.
C & C Electric Co.	Jersey Central Bldg., New York City.	Cortlandt 2774.
D'Olier Engineering Co.	119-121 South 11th St., Philadelphia.	
	74 Cortlandt St., New York City.;	Cortlandt 7367.
	9 North Calvert St., Baltimore; Empire Bldg., Atlanta.	
E-J Electric Installation Co.,	503 Fifth Ave., New York.	38th St. 3668.
	111 Summer St., Boston, Mass.	Oxford 1621-2.
Kohler Brothers, Contracting Electrical Engineers, Lighting, Power, Railways,	1804-12 Fisher Building, Chicago.	
Northern Electrical Mfg. Co.,	Madison, Wis.	
Thompson-Starrett Co.	51 Wall St., New York City.	Broad 3908.
Westinghouse Machine Co., Design, Construction and Equipment, Electric Light and Power Stations.	New York City.	Broad 5360.
Electric Lighting Equipment		
Northern Electrical Manufacturing Co.	Madison, Wis.	
Enameled Brick		
Tiffany Enameled Brick Co.,	Momence, Ill.	
Engines		
Westinghouse Machine Co., Design, Construction and Equipment, Electric Light and Power Stations.		
Philadelphia, Boston, Pittsburg, Detroit, Chicago, New York City.		Broad 5360.
Engineers and Contractors		
American Bridge Company,	100 Broadway, New York.	Cortlandt 1826.
	Frick Building, Pittsburgh.	
	1315 Monadnock Block, Chicago.	
Thompson-Starrett Co.	51 Wall St., New York City.	Broad 3908.

		TELEPHONE
Felt		
F. W. Bird & Son,	Chicago, Ill.; East Walpole, Mass.; Washington, D.C. 120 Liberty St., New York City.	Cortlandt 4856.
Fencing		
F. E. Carpenter Co.,	7 and 9 Warren St., New York.	Cortlandt 4150.
Rogers Iron Co.	Springfield, Mass.	
D. P. Van Gordon	95 Essex St., Orange, N. J.	
Filters		
Loomis-Manning Filter Co.,	Main Office: 402 Chestnut St., Philadelphia.	
Fireplace Fixtures		
Alfred Boote Co.,	124-126 W. 33d St., New York.	Madison Sq. 743.
W. H. Jackson Co.,	29 E. 17th St., New York. Foundry and Shops, 229-239 W. 28th St.	Gramercy 2076.
Fireproofing		
The Roebling Construction Co., Roebling System of Fireproof Floors.	Fuller Building, New York.	Gramercy 5062.
Fireproof Doors and Shutters		
Kinnear Mfg. Co.	Columbus, O.	
Fireproof Windows		
American Luxfer Prism Co.	Chicago. New York, 160 Fifth Ave. Boston, Mass.	Gramercy 2911.
Fireproof Wood		
American Wood Fireproofing Co.,	156 Fifth Ave., New York.	Gramercy 1612.
Fireproofine Mfg. Co.,	88 Beaver St., New York City.	Broad 5550.
Floor and Wood-Work Polish		
Butcher Polish Co.	356 Atlantic Avenue, Boston, Mass.	
Florists and Landscape Gardeners		
Chas. A. Dards, Choice Flowers and Plants.	44th St and Madison Ave., New York	38th St. 1853.
Wadley & Smythe,	491 Fifth Ave., New York.	38th St. 1512.
Fountains		
Erkins Studios	4 West 15th St., New York City.	
Fuel Economy		
Morgan & Co.	Chicago, Ill.	
Furnaces and Ranges		
Columbia Heating Co.,	Chicago, Ill.	
The Thatcher Furnace Co., Furnaces, Ranges, Steam and Hot Water Heaters.	240 Water Street, New York.	John 187.
Furniture		
The Brooks Household Art Co.,	636 Prospect St., Cleveland, O.	
W. & J. Sloane	Broadway and 19th St., New York City.	Gramercy 2200.
Charles R. Yandell & Co.	14 West 45th St., New York City.	
Garbage Crematories		
Cragin Garbage Crematory Co.,	Chicago, Ill.	
Municipal Engineering Co.,	1123 Broadway, New York.	Madison Sq. 879.
Morse-Boulger Destructor Co.,	39 Cortlandt St., New York.	Cortlandt 8185.
S. Wilks Mfg. Co.	3500 Shields Ave., Chicago, Ill.	
Gates		
Rogers Iron Co.	Springfield, Mass.	
Glass Mosaics		
Walter Janes & Co.	123 East 23d St., New York City.	
Greenhouses		
Hitchings & Co.,	233 Mercer Street, New York.	Spring 732.
Lord & Burnham Co.,	New York Office, 1133 Broadway. General Offices and Works at Irvington-on-Hudson.	Madison Square 11.
Hardwood Floors		
Phelps Bros Co,	Wellington, O.	
The Wilke Mfg. Co.,	14 East 22d Street, New York.	18th St. 5010.
Wood Mosaic Flooring Co.	Rochester, N. Y.	
Heating Apparatus		
Humphrey Co.	Kalamazoo, Mich.	
Kelsey Heating Co., Warm Air Generator,	Main Office, Syracuse, N. Y. New York Office, 156 Fifth Avenue.	18th St. 4141.
Lord & Burnham Co.	New York Office, 1133 Broadway. General Offices and Works at Irvington-on-Hudson.	Madison Sq. 11.
Thatcher Furnace Co,	240 Water Street, New York.	John 187.
Hose (Fire)		
Eureka Fire Hose Co., Fire and Water Hose for Builders and Contractors.	13 Barclay Street, New York.	Cortlandt 2659.

		TELEPHONE.
Hot-Bed Sash		
HITCHINGS & CO.	233 Mercer Street, New York.	Spring 732.
LORD & BURNHAM CO.,	General Offices and Works at Irvington-on-Hudson. New York Office, 1133 Broadway.	Madison Square 11.
Hot Blast Apparatus		
ANDREWS & JOHNSON CO.,	Chicago.	
Interior Marble Workers		
WILLIAM GRAY & SONS	Thirtieth St., below Walnut Philadelphia.	
Interlocked Columns		
W. T. CROOK,	1133 Broadway, New York.	Madison Sq. 2047.
Iron and Metal Workers		
ART METAL CONSTRUCTION CO.	Jamestown, N. Y.	
COOPER-WIGAND-COOKE COMPANY, Structural and Ornamental Iron Work for Buildings.	152-154 West 34th Street, New York.	38th St. 5421.
FLOUR CITY ORNAMENTAL IRON WORKS,	Minneapolis, Minn.	
HECLA IRON WORKS, Architectural and Ornamental Bronze and Iron Work.	North 11th and Berry Sts., Brooklyn, N. Y.	Greenpoint 490.
RICHEY, BROWNE & DONALD, Architectural Cast and Wrought Iron, Brass and Bronze.	Borden and Review Avs., Long Island City, New York	Greenpoint 315.
JNO. WILLIAMS, American Art in Bronze and Iron,	556 West 27th Street, New York.	Chelsea 88.
WINSLOW BROS. COMPANY,	Chicago. New York Office, 160 Fifth Ave.	Tel. connection.
Italian Gardens and Halls		
ERKINS STUDIOS	4 West 15th St., New York City.	
Kitchen Outfitters		
DUPARQUET, HUOT & MONEUSE CO.	43-45 Wooster St., New York City.	Spring 2473.
Landscape Architect		
F. VON HOFFMANN,	St. James Bldg., 1133 Broadway, N. Y. City.	
Laundry Machinery		
NORTHERN ELECTRICAL MANUFACTURING CO., Electric Motors for Operating Laundry Machinery	Madison, Wis.	
WATKINS LAUNDRY MACHINERY CO.	39 Cortlandt St., New York City.	Cortlandt 8223.
Leather Decorators		
CHARLES R. YANDELL & CO.	14 West 45th St., New York City.	
Lighting Fixtures		
STERLING BRONZE CO.	12 E. 30th St., New York City. 1916 Spring Garden St., Philadelphia.	Madison Sq. 2766.
Lighting and Power Plants		
NORTHERN ELECTRICAL MFG. CO.	Madison, Wis.	
Mantels		
ALFRED BOOTE CO.,	124-126 West 33d St., New York.	Madison Sq. 743.
THE BROOKS HOUSEHOLD ART CO.,	636 Prospect St., Cleveland, O.	
W. H. JACKSON CO.,	29 E. 17th St., New York City. Foundry and Shops, 229-239 W. 28th St.	Gramercy 2076.
C. J. WADSWORTH,	1304-6 Euclid Ave., Cleveland, O.	
Marble		
BATTERSON & EISELE, Mosaic for Floors, Walls, Mantels, etc.	431 11th Avenue, New York.	38th St. 4385.
MYCENIAN MARBLE CO., High-Grade Artificial Marble.	524 and 526 West 34th Street, New York.	38th St. 2542.
JOHN H. SHIPWAY & BROTHER,	136th Street and East River, New York.	Melrose 1187.
WESTFIELD MARBLE & SANDSTONE CO.	Westfield, Mass.; New York Office, 24 East 23d St.	Gramercy 3929.
Mausoleums		
JOS. B. REINHALTER & CO.	Barre, Vt.; Philadelphia, Pa.; Cincinnati, O.	
Mechanical and Electrical Engineers and Contractors		
D'OLIER ENGINEERING CO.	119-121 South 11th St., Philadelphia. New York City, 74 Cortlandt St. Baltimore, 405 Courtland St.; Atlanta, Empire Building.	Cortlandt 7367.
Metal Ceilings		
NORTHROP, COBURN & DODGE CO.,	40 Cherry Street, New York.	John 1481.
Metal Lath		
TRUSS METAL LATH CO.,	15 Whitehall St., New York.	
Metal Roofing		
AMERICAN ROLLING MILL CO.,	Cincinnati, O.	
Modeling		
A. P. LOMBARD & CO.	99-101 Bristol St., Boston, Mass.	Tremont 58.
CHAS. EMMEL,	383 Albany St., Boston, Mass.	
JACOBSON & CO.	246 East 44th St., New York City.	38th St. 44.
J. FRANKLIN WHITMAN CO.	212 South 5th St., Philadelphia.	

		TELEPHONE.
Monuments		
JOS. B. REINHALTER & CO.	Barre, Vt.; Philadelphia, Pa.; Cincinnati, O.	
Mosaic Wood Floors		
PHELPS BROS. & CO.,	Wellington, Ohio.	
WOOD MOSAIC FLOORING CO.	Rochester, N. Y.	
Mosaic Workers		
BATTERSON & EISELE, Mosaic for Floors, Walls, Mantels, etc.	431 11th Avenue, New York.	38th St. 4385.
Motors, Electric		
C & C ELECTRIC CO.	Jersey Central Bldg., New York City.	Cortlandt 2774.
KOHLER BROS., Contracting Electrical Engineers, Power, Lighting, Railways,	1804-12 Fisher Building, Chicago.	
NORTHERN ELECTRICAL MFG. CO.,	Madison, Wis.	
Mural Painting		
WALTER JANES & COMPANY,	123 East 23d St., New York City.	
Musical Instruments		
HUTCHINGS-VOTEY ORGAN CO.	New York Office, 156 Fifth Ave.	18th St. 3022.
THE AEOLIAN CO.	362 Fifth Ave., City.	38th St. 3311.
Ornamental Ironwork		
FLOUR CITY ORNAMENTAL IRON WORKS,	Minneapolis, Minn.	
U. S. FOUNDRY & SALES CO.	South Norwalk, Conn.	No. 190.
WM. F. REMPPIS CO.	Offices, Witherspoon Bldg., Philadelphia. Works at Reading, Pa.	
WINSLOW BROS. CO., Chicago,	New York Office: 160 Fifth Ave.	Tel. connection.
Paints		
THE BRIDGEPORT WOOD FINISHING CO.	55 Fulton Street, New York. New Milford, Conn.; Philadelphia, Chicago.	John 741.
F. W. DEVOE & C. T. RAYNOLDS CO.	Fulton St., Cor. William, New York. New York, Philadelphia and Chicago	John 2906.
JOS. DIXON CRUCIBLE CO.	Jersey City, N. J.	J. C. 2020.
JOHN LUCAS & CO.,	New York Office, 80 Maiden Lane.	John 1430.
PICHER LEAD COMPANY,	Tacoma Building, Chicago. 100 William Street, New York. Works at Joplin, Mo.	
Parquet Flooring		
WOOD MOSAIC FLOORING CO.	Rochester, N. Y.	
Partitions		
WM. H. BRODIE & CO.	45 Vesey St., New York City.	Cortlandt 3415.
Patent Lawyers		
SHEPHERD & PARKER	108 Revenue Bldg., Washington, D. C.	
Photographs		
JAMES L. DILLON,	1017 Chestnut Street, Philadelphia.	
Pianos		
STEINWAY & SONS, Specially Designed Pianos.	107 East 14th Street, New York.	18th St. 2210.
Pipe Organs		
THE AEOLIAN CO.	362 Fifth Ave., City.	38th St. 3311.
Plaster		
V. C. & C. V. KING CO.,	513 West St., New York.	Spring 294.
Plaster Board		
SACKETT WALL BOARD CO.	15 Battery Place, New York	John 2944.
Plumbing Fixtures		
BENEDICT & BURNHAM MFG. CO., "Benedict-Nickel" Seamless Tubing,	Waterbury, Conn. 253 Broadway, New York.	Cortlandt 2758.
INSTANTANEOUS WATER HEATING CO.,	86-96 East Ohio St., Chicago.	North 840.
THE PECK BROS. COMPANY,	New Haven, Conn. 27 West 42d St., New York.	38th St. 1065.
STANDARD SANITARY MFG. CO.	Pittsburg, Pa.	
Pneumatic Interchange		
LAMSON CONSOLIDATED S. S. CO.	Boston, Mass.	
Polish (Floor)		
BUTCHER POLISH CO.,	356 Atlantic Ave., Boston, Mass.	
Polishing Machinery (Electrical)		
NORTHERN ELECTRICAL MFG. CO.	Madison, Wis.	
Porcelain Enameled Baths		
STANDARD SANITARY MFG. CO.	Pittsburg, Pa.	
Porcelain Enamel Paint		
RINALD BROS.,	1142-1146 N. Hancock Street, Philadelphia, Pa.	Long-Dist. Te' Market 17-63.
Prisms		
AMERICAN LUXFER PRISM CO.,	346-348 Wabash Ave., Chicago	

		TELEPHONE.
Pumps		
NORTHERN ELECTRICAL MFG. CO., Electric Motors for Operating Pumps	Madison, Wis.	
Refrigerators		
BRUNSWICK-BALKE-COLLENDER CO.,	227-9 Fourth Avenue, New York.	18th St. 3944.
MCCRAY REFRIGERATOR CO.	Kendallville, Ind.	
WILKE MFG. CO.,	24 East 22d St., New York.	18th St. 5010.
Reinforced Concrete Construction		
WIGHT-EASTON-TOWNSEND CO., Engineers and Contractors	663 West 45th St., New York.	38th St. 2513.
Roofing Slate		
E. J. JOHNSON & CO.	38 Park Row, N. Y. City.	Cortlandt 362.
Roofing Tiles		
O. D. PERSON, Office, 160 Fifth Ave.; Yards, 137th St. and Madison Ave.		18th 292. Harlem 219.
Roofing Tin		
AMERICAN TIN PLATE CO.,	Battery Park Building, New Yo k.	Broad 2920
N. & G. TAYLOR CO., Main Office:	Chestnut and 3d Sts., Philadelphia.	Madison Sq. 3225.
	New York Office, 1123 Broadway.	18th St. 2010.
Rugs		
COSTIKYAN BROS & CO.	147 Fifth Ave., New York City.	Gramercy 1068.
PERSIAN RUG MANUFACTORY,	898-900 Broadway, New York.	
W. & J. SLOANE	Broadway and 19th St., New York City.	Gramercy 2200.
Rustic Builder		
D. P. VAN GORDON,	95 Essex St., Orange, N. J.	
Safe Deposit Vaults		
YORK SAFE AND LOCK CO.	York, Pa.	
Safety Tread		
UNIVERSAL SAFETY TREAD CO.	45 Broadway, New York City.	Broad 3170.
Sand Brick		
H. HUENNEKES CO.,	114-118 Liberty Street, New York.	Cortlandt 5146.
Sanitary Plumbing Appliances		
THE PECK BROS. COMPANY,	New Haven, Conn.	
	27 West 42d St., New York.	38th St. 1065.
STANDARD SANITARY MFG. CO.	Pittsburg, Pa.	
Sash Operating Device		
HITCHINGS & CO.,	233 Mercer Street, New York.	Spring 732.
LORD & BURNHAM CO.,	New York Office, 1133 Broadway.	Madison Sq. 11.
	General Offices and Works at Irvington-on-Hudson.	
Sash Locks		
THE W. & E. T. FITCH CO., "The Perfect Window Fastener."	New Haven, Conn.	
Sculptors (Decorative)		
J. FRANKLIN WHITMAN CO.	212 South 5th St., Philadelphia.	
Sewer Lift		
THE ELLIS COMPANY,	216 West 23d St., New York City.	Chelsea 2142.
Sewage Purification		
MUNICIPAL ENGINEERING CO.,	Wall St. Exchange Building.	Broad 5334.
Sheet Metal Frames and Sash		
JAS. A. MILLER & BRO.	133 South Clinton St., Chicago, Ill.	
Silica-Graphite Paint		
JOS. DIXON CRUCIBLE CO.	Jersey City, N. J.	J. C. 2020.
Skylights and Sidewalk Lights		
AMERICAN LUXFER PRISM CO.,	346-348 Wabash Ave., Chicago.	
JAS. A. MILLER & BRO.	133 South Clinton St., Chicago, Ill.	
Slate Blackboards		
E. J. JOHNSON,	38 Park Row, N. Y. City.	Cortlandt 362.
Snow Guard		
FOLSOM SNOW GUARD CO., Roof Snow Guards.	Boston, Mass.	
Stable Sanitation		
S. F. LINDSTAM,	2615 North Aldrich St., Minneapolis, Minn.	
Stained and Leaded Glass		
THE FLANAGAN & BIEDEWEG CO.	66 Illinois St., Chicago, Ill.	
GEORGE HARDY PAYNE,	38-40 Park Avenue, Paterson, N. J.	
	New York Office: 253 4th Avenue.	
WALTER JANES & CO.,	123 East 23d St., New York.	Gramercy 6970.
Statuary		
ERKINS STUDIOS	4 West 15th St., New York City.	

Steam and Hot Water Heaters

Hitchings & Co.,	233 Mercer St., New York.	Spring 732.
Lord & Burnham Co.	New York Office, 1133 Broadway.	Madison Sq. 11.
	General Offices and Works at Irvington-on-Hudson.	
The Thatcher Furnace Co., Furnaces, Ranges, Steam and Hot Water Heaters.	240 Water Street, New York.	John 187.

Steel Concrete Construction

Truss Metal Lath Co.,	15 Whitehall St., New York.	

Steel Rolling Doors and Shutters

Wm. H. Brodie & Co.	45 Vesey St., New York City.	Cortlandt 3415.
Kinnear Mfg. Co.	Columbus, O.	

Steel Storage Tanks

S. Wilks Mfg. Co.,	3500 Shields Ave., Chicago, Ill.	Yards 866.

Stone

Medina Quarry Co., Dealers in Medina Stone for Building, Curbing, Paving and Platforms.	150 Nassau Street, New York.	John 1542.
John R. Smith's Son, Cut Stone Contractor,	Foot East 103d St., New York.	Harlem 75.
Westfield Marble & Sandstone Co.	Westfield, Mass.; New York Office, 24 East 23d St.	Gramercy 5929.

Structural Steel

American Bridge Co., Chicago; Pittsburgh; New York; 100 Broadway.		Cortlandt 1826.
Thompson-Starrett Co.	51 Wall St., New York City.	Broad 3908.

Summer Houses

D. P. Van Gordon,	95 Essex St., Orange, N. J.	

Telephones

Kellogg Switchboard & Supply Co.	Green and Congress Sts., Chicago, Ill.	

Terra Cotta

Northwestern Terra Cotta Co.,	1000 Clybourn Ave., Chicago.	

Tile

American Enameled Brick & Tile Co., Enameled Subway and Interlocking Tile.	1 Madison Avenue, New York.	18th St. 731.
Alfred Boote Co.,	124-126 West 33d St., New York.	Madison Sq. 743.
Tiffany Enameled Brick Co.,	Momence, Ill.	
W. H. Jackson Co.,	29 E. 17th St., New York City.	Gramercy 2076.
	Foundry and Shops, 229-239 W. 28th St.	

Tube Transit

Lamson Consolidated Store Service Co.,	Boston, Mass.	

Underground Conduit Systems

American Conduit Co.,	170 Broadway, New York.	Cortlandt 3854.
	822 Manhattan Bldg., Chicago, Ill.	
	336 Macy St., Los Angeles, Cal.	

Vacuum Steam Heating

Morgan & Co.	Chicago, Ill.	

Varnish Manufacturers

F. W. Devoe & C. T. Raynolds Co.	Fulton St., Cor. William, New York.	John 2903.
John Lucas & Co.	New York; Philadelphia; Chicago.	
	New York Office, 80 Maiden Lane.	John 1430.

Vault Doors

York Safe & Lock Co.	York, Pa.	

Vault Lights

American Luxfer Prism Co.,	346-348 Wabash Ave., Chicago.	

Ventilators

American Rolling Mill Co.,	Cincinnati, O.	

Wall Hangings

The Leatherole Co.,	142 West 23d St., New York.	Chelsea 653.
Charles R. Yandell,	14 West 45th St., New York City.	38th St. 2944.
Richter Mfg. Co	43 Franklin Ave., Tenafly, N. J.	

Wall Papers

W. H. S. Lloyd Co., English, French and Japanese Wall Hangings.	26 E. 22d St., New York.	18th St. 2371.

Water Heaters

Columbia Heating Co., Florence Water Heaters.	Chicago, Ill.	North 840.
The Humphrey Co.	538 Rose Street, Kalamazoo, Mich.	
The Instantaneous Water-Heating Co., Bath and Domestic Purposes	90 East Ohio St., Chicago.	
The Thatcher Furnace Company.	240 Water Street, New York.	John 187.
S. Wilks Mfg. Co.,	3500 Shields Ave., Chicago.	Yards 866.

		TELEPHONE.
Water Towers		
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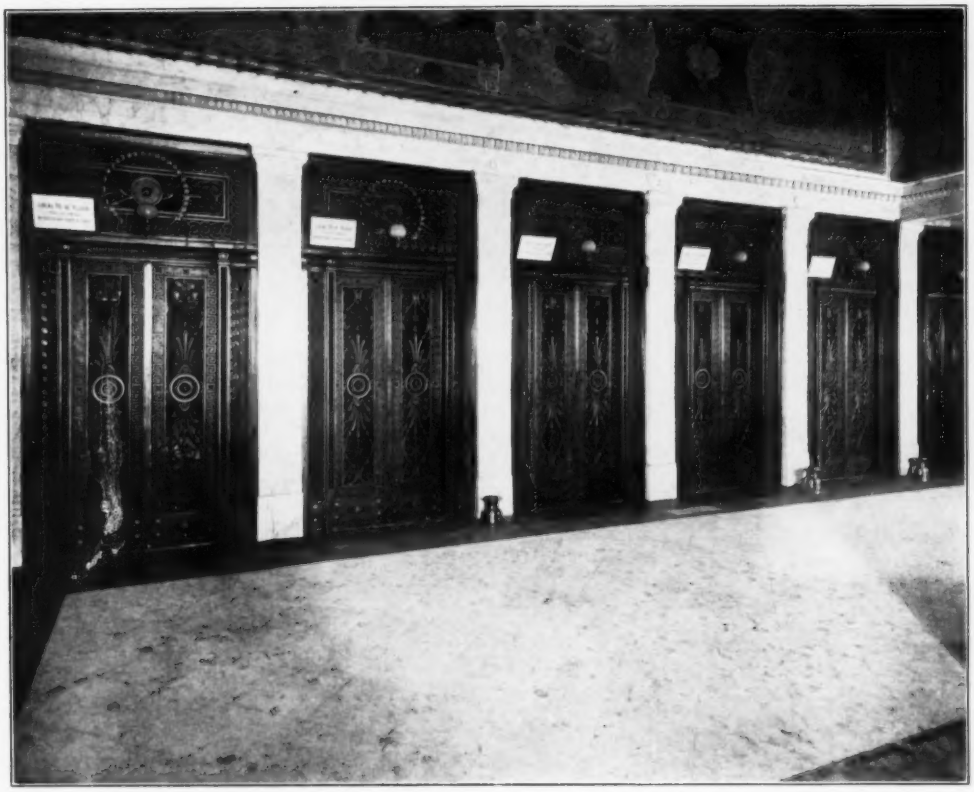

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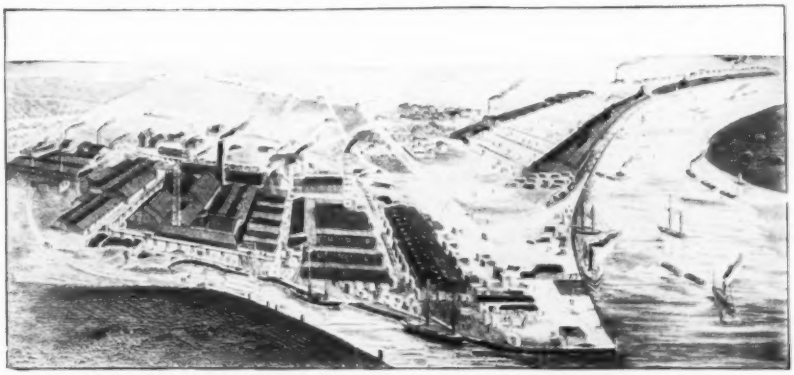

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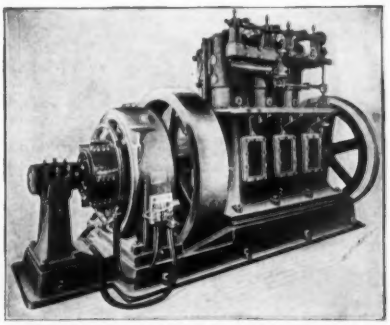

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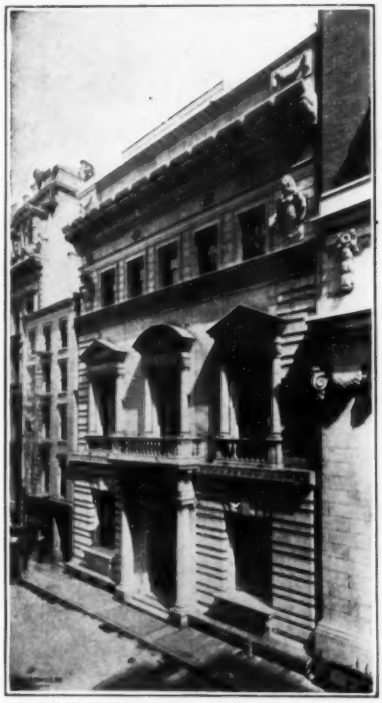

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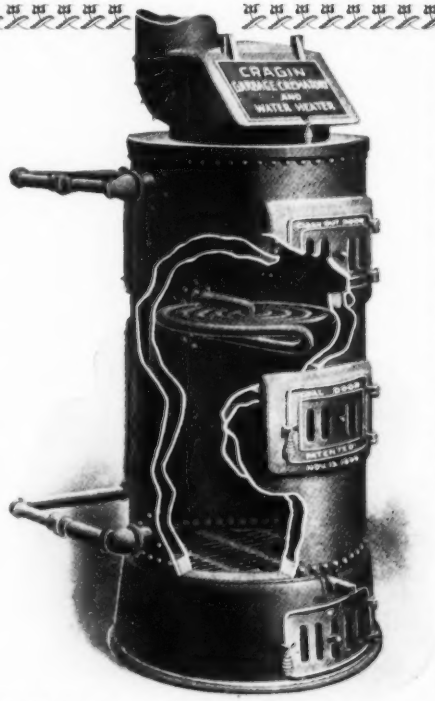

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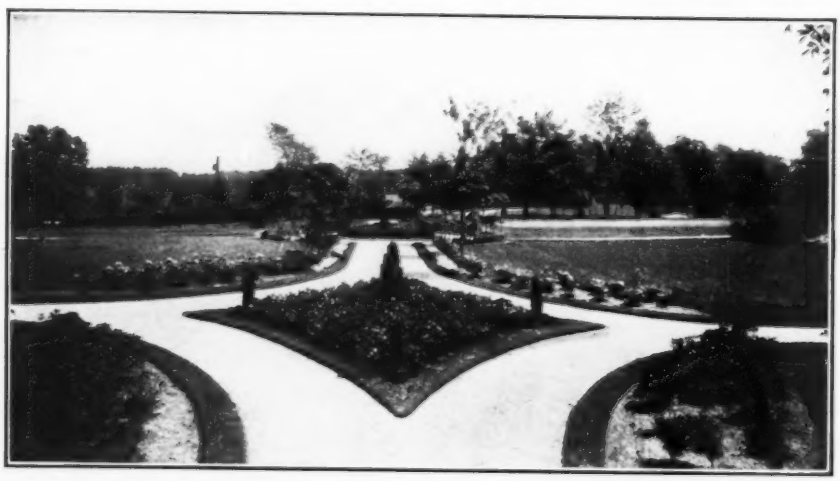

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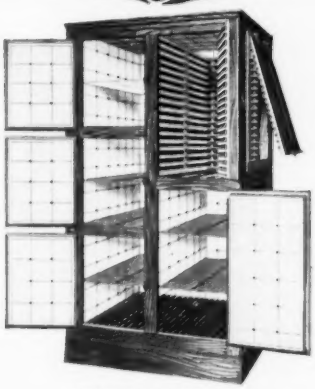

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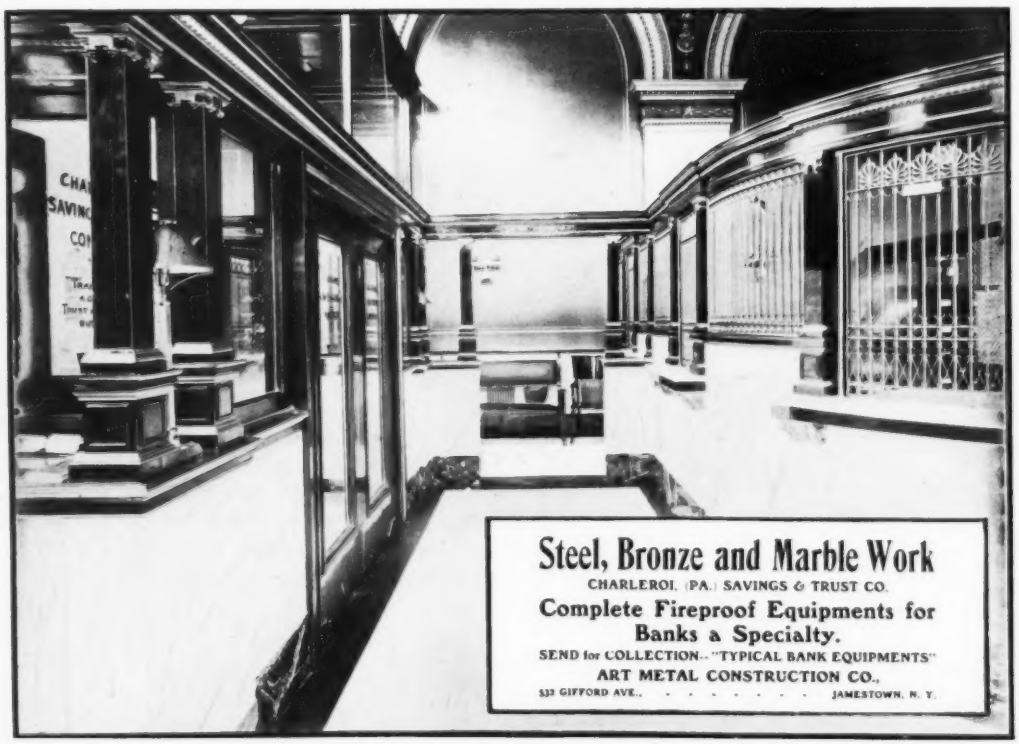

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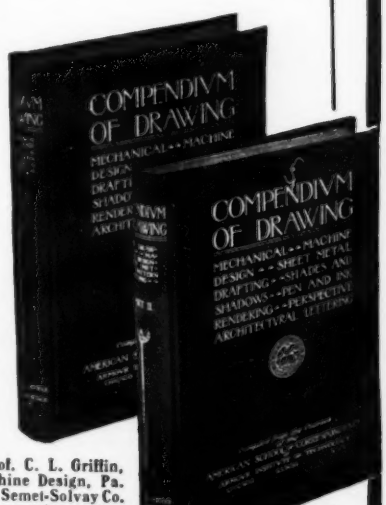
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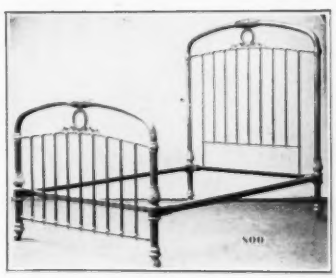

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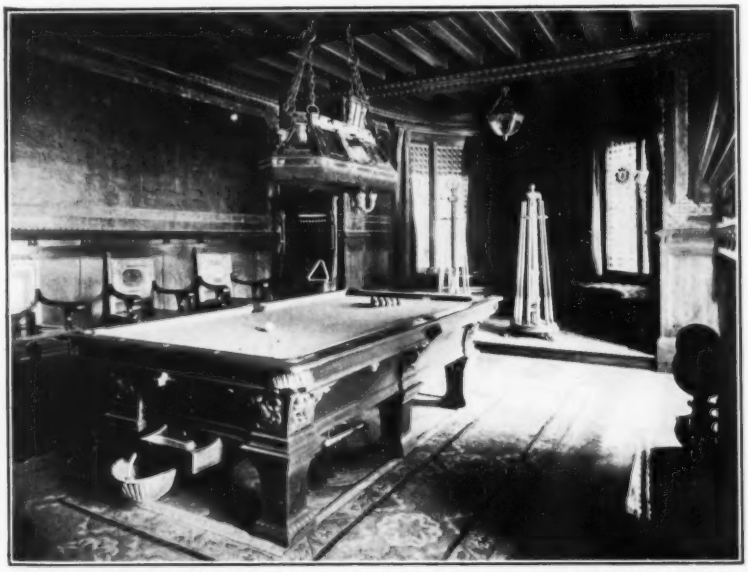

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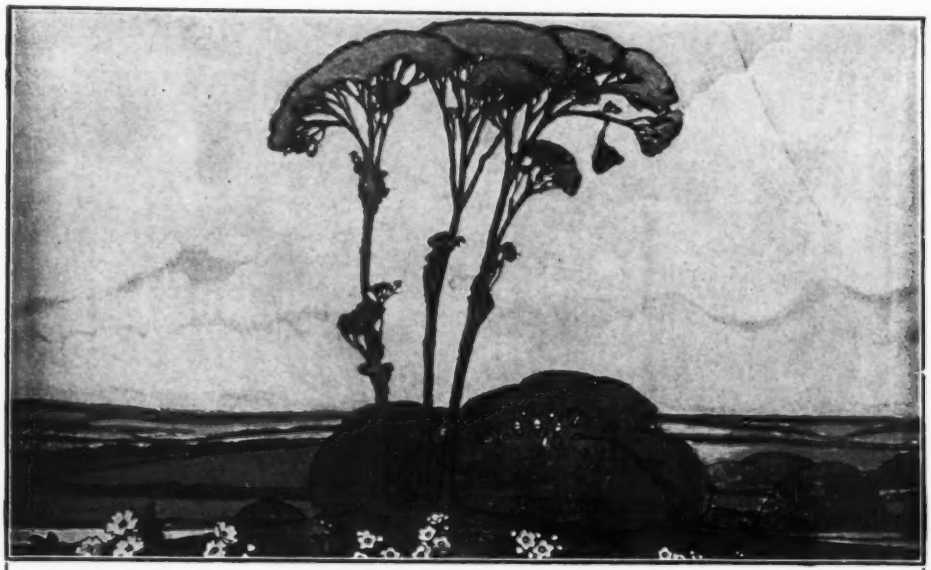

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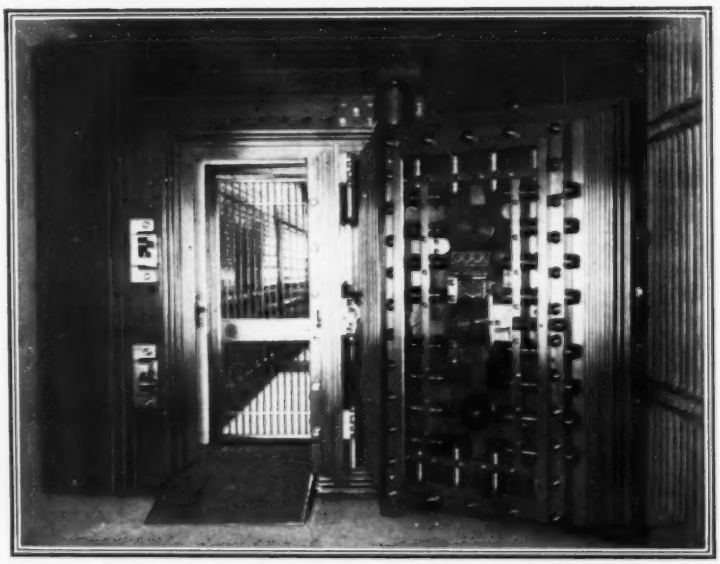

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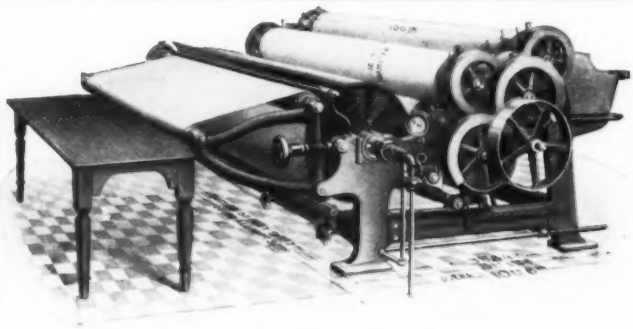

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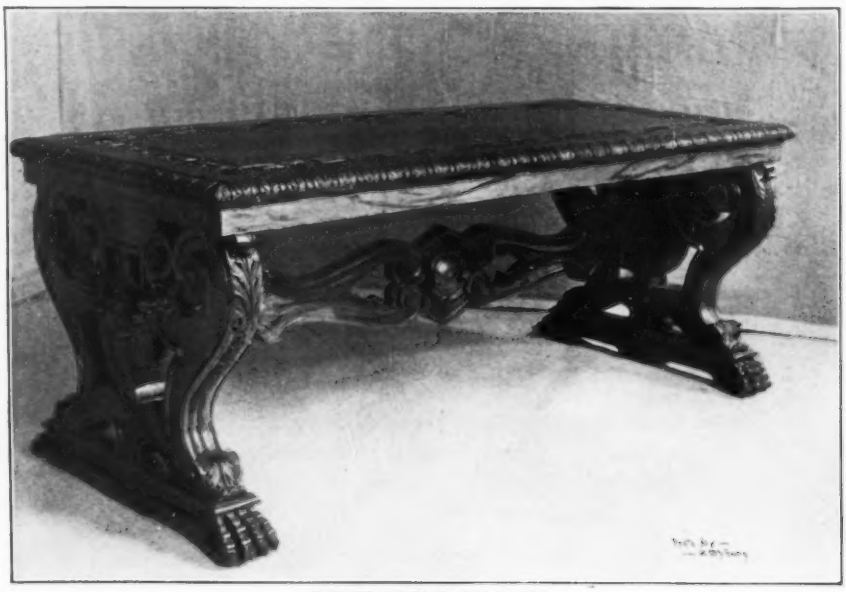

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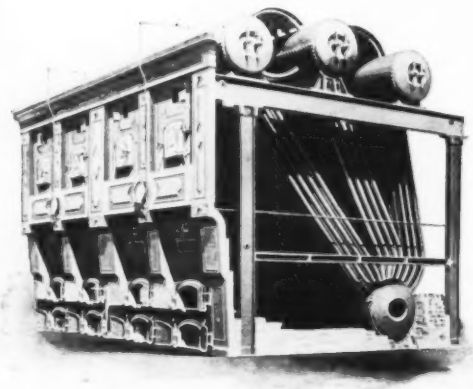

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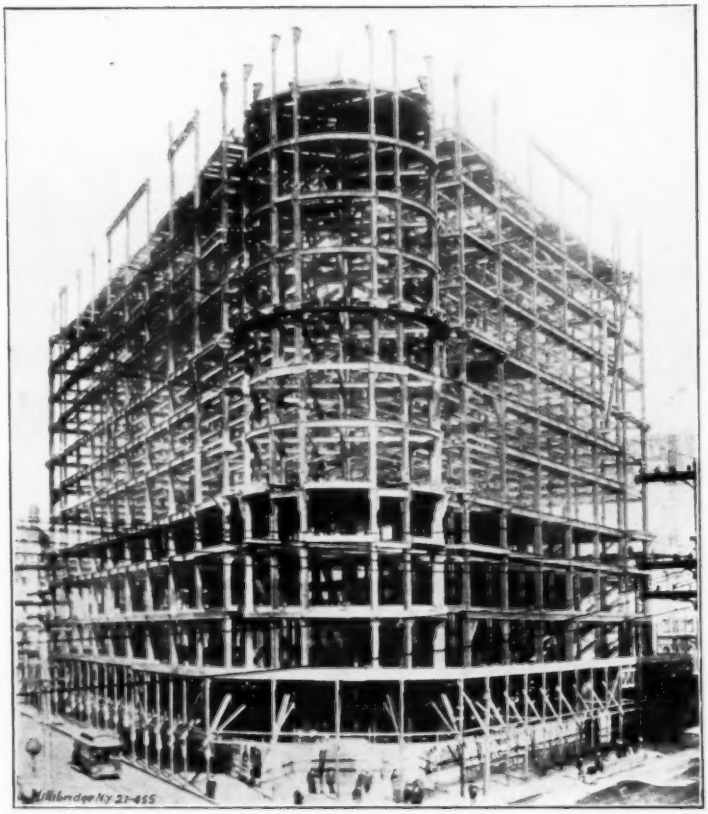

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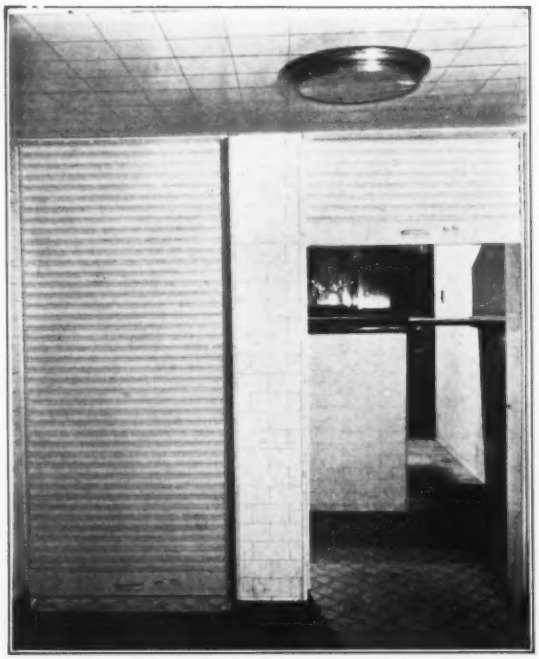

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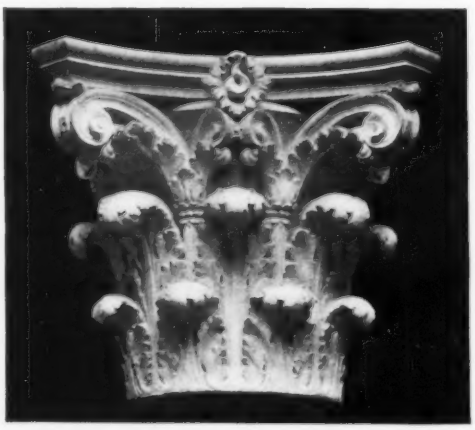

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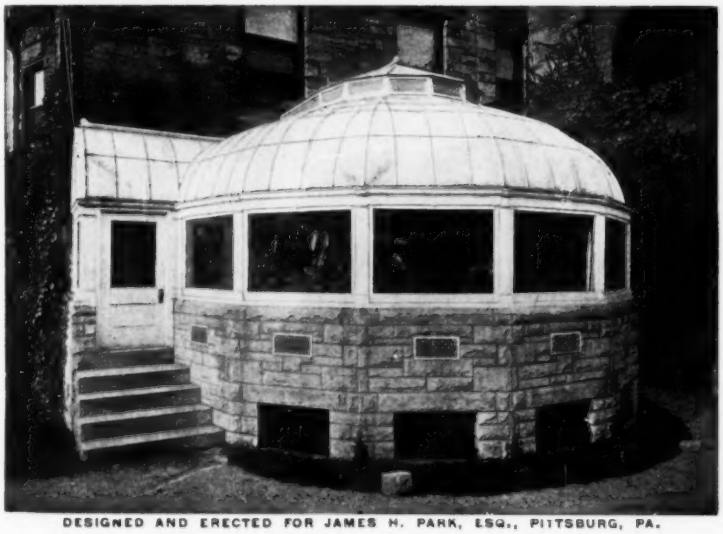

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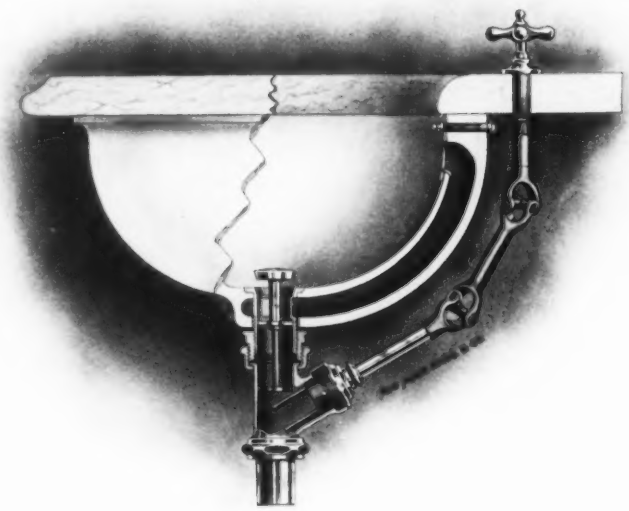

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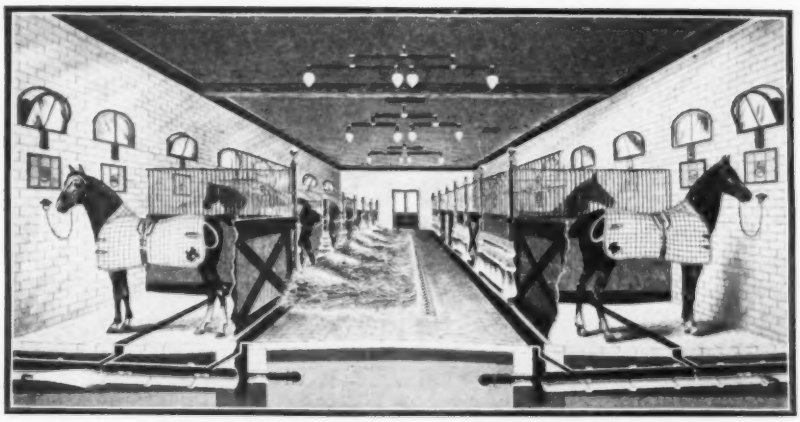

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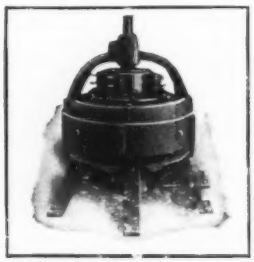

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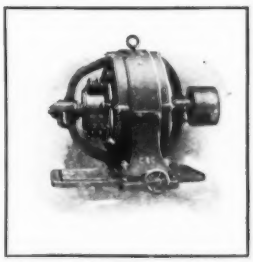

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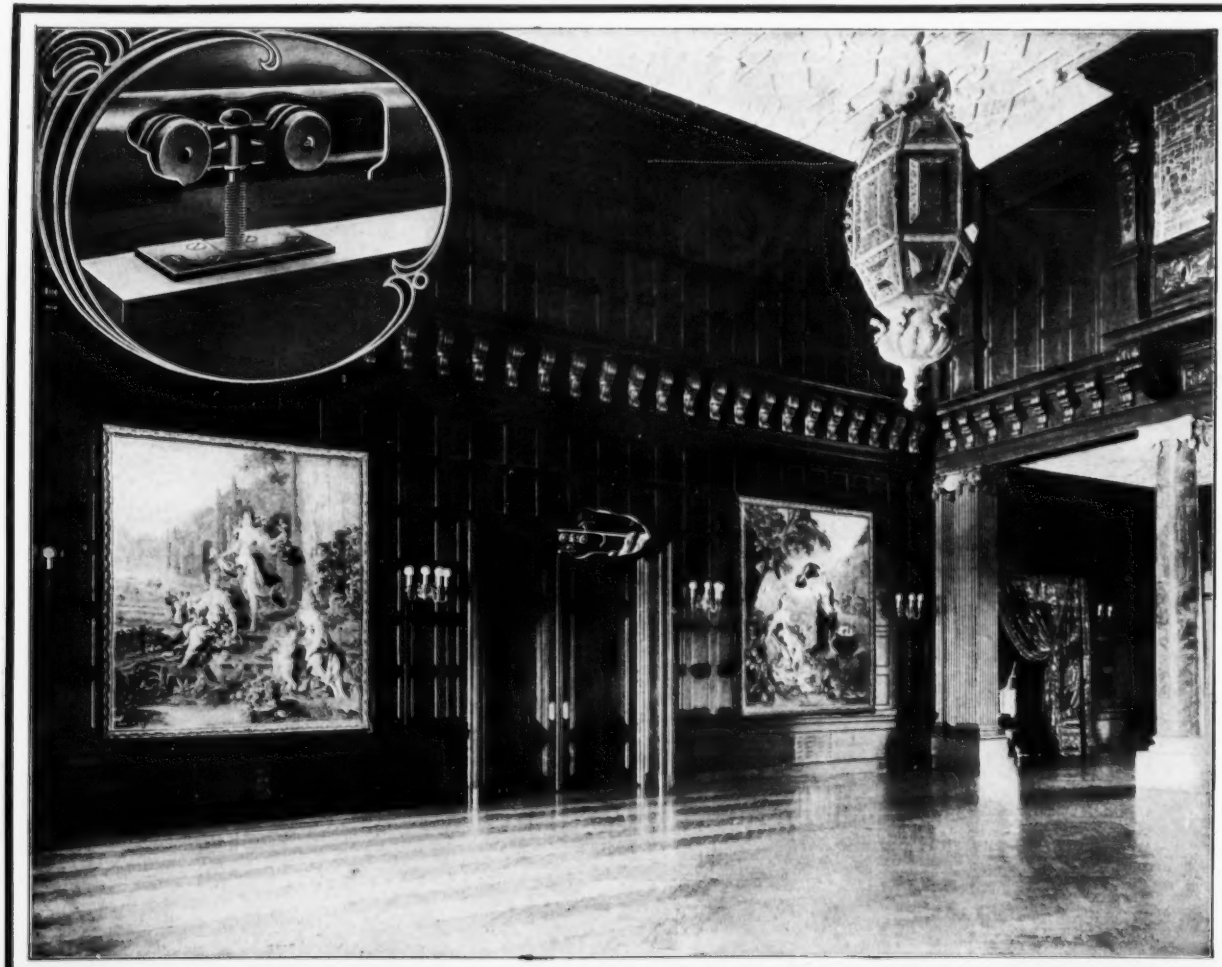

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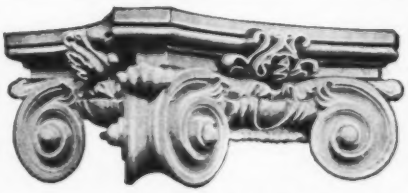

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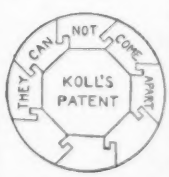

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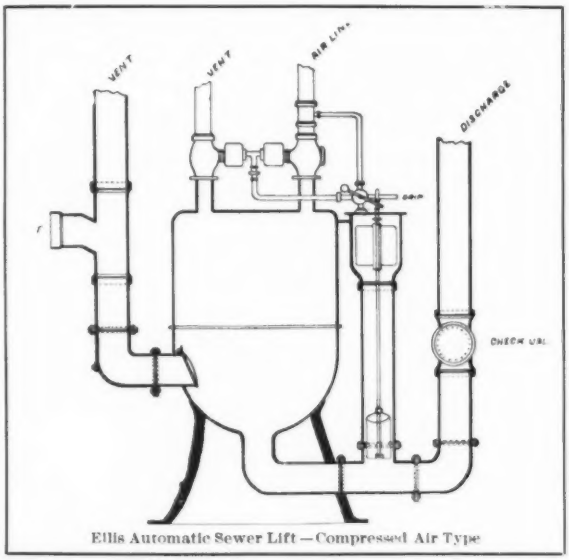

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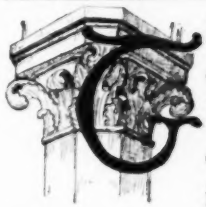

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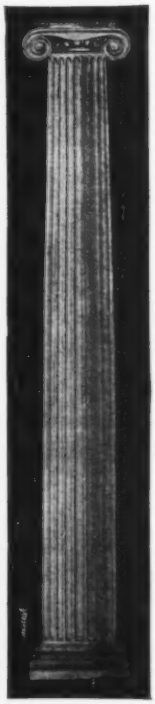

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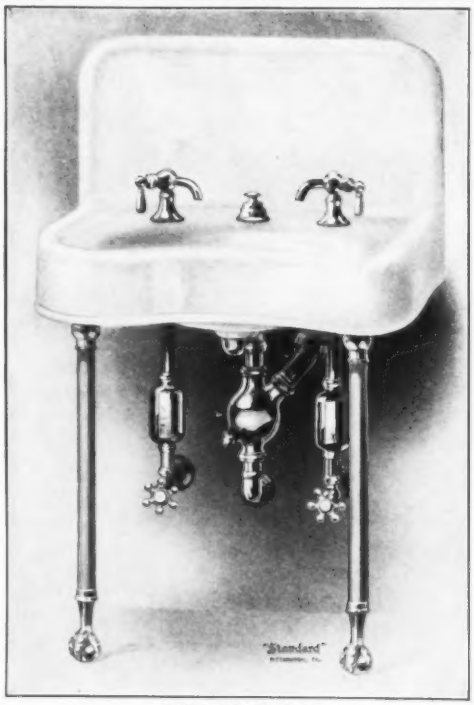

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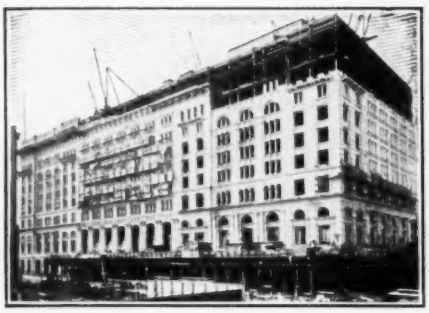

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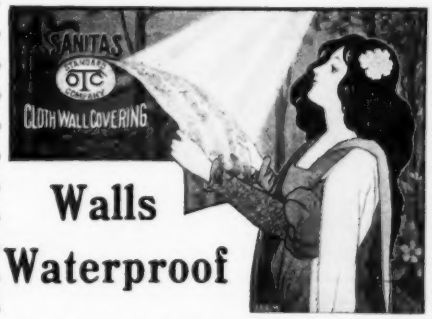

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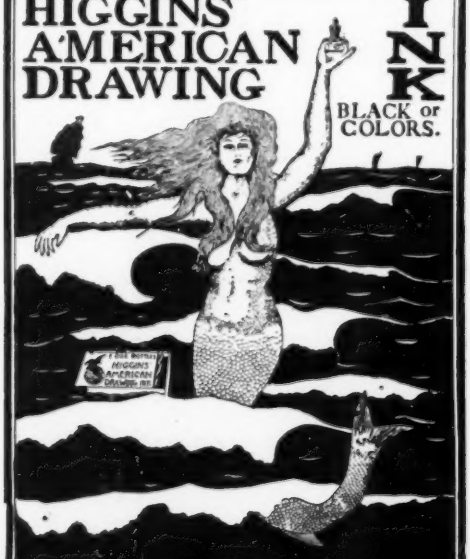

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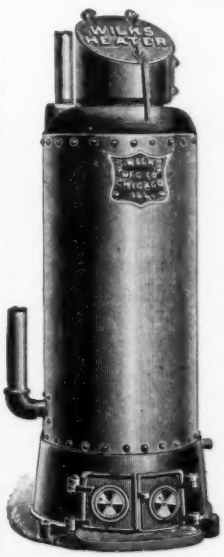

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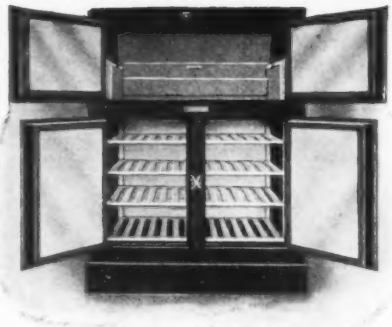

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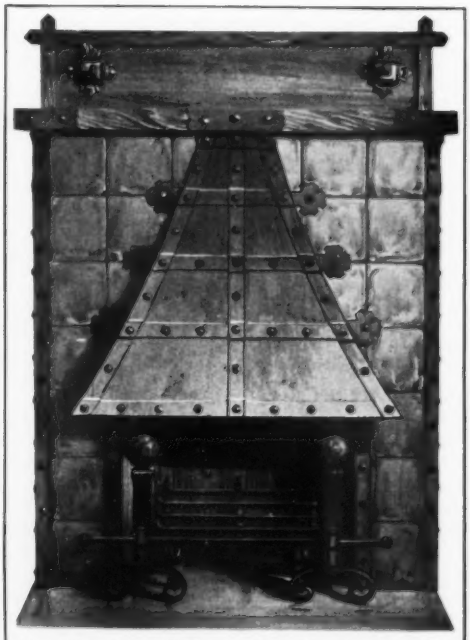

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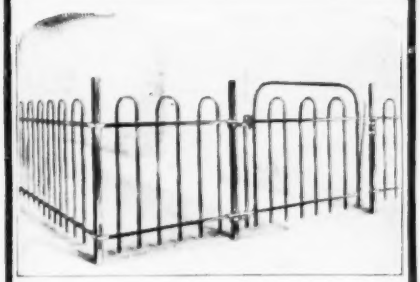

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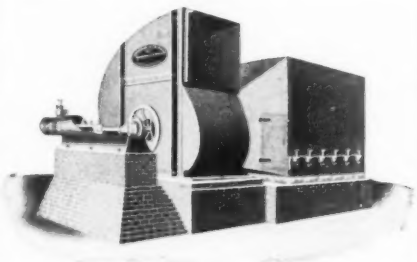

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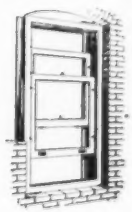

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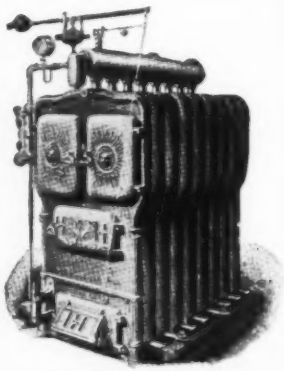

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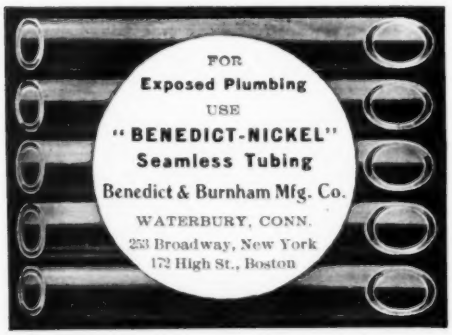

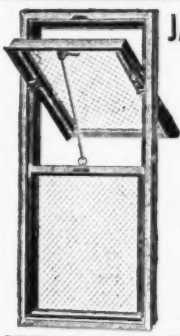

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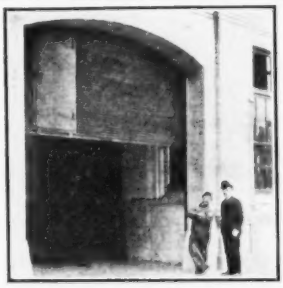

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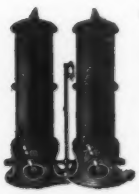
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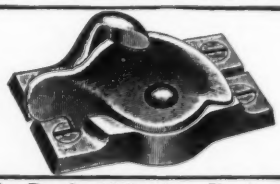
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